

ARCHITECTURE DEPARTMENT

CHINESE UNIVERSITY OF HONG KONG

MASTER OF ARCHITECTURE PROGRAMME

2002-2003

DESIGN REPORT

01 Introduction

02 Introduction into Architecture

03 Music as a metaphor

04 Design progress for music

05 Acoustic performance

06 Study of street music performance

07 Site Analysis

08 Design intention

09 Design Development 01-04

10 Final Design

11 Reference

12 Acknowledgements



MUSIC AND ARCHITECTURE

CHAN Ka Chun

May 2003



	Page
01 Introduction	01
02 Translate Music into Architecture	03
03 Music as a Metaphor	07
04 Design a program for music	09
05 Acoustic of performance	11
06 Study of street music performance	13
07 Site Analysis	15
08 Design Intention	17
09 Design Development 01-04	25
10 Final Design	43
11 Reference	57
12 Acknowledgement	58

"The intimate relationships at the most fundamental and conceptual levels between architectural design and musical composition are so remarkable in their similarity (mathematical ratios, structure), so different in other characteristics (the role of "function"), and even maintain territorial struggles regarding certain phenomena, such as the "rights" to time and space. It is for this reason that the architectural designer interested in opening up new spatial/formal possibilities will certainly benefit from learning how composers reify basic concepts, which as proportion, structure, etc. Music and architecture share concepts, which (although they are for the most part necessarily made differently), still retain similarity in the higher, metaphysical, realm of pure thought. These ideas common to music and architecture have been worked out in certain ways by musicians that can be studied and adapted by architects as potential models for the marking of creative spaces and buildings."

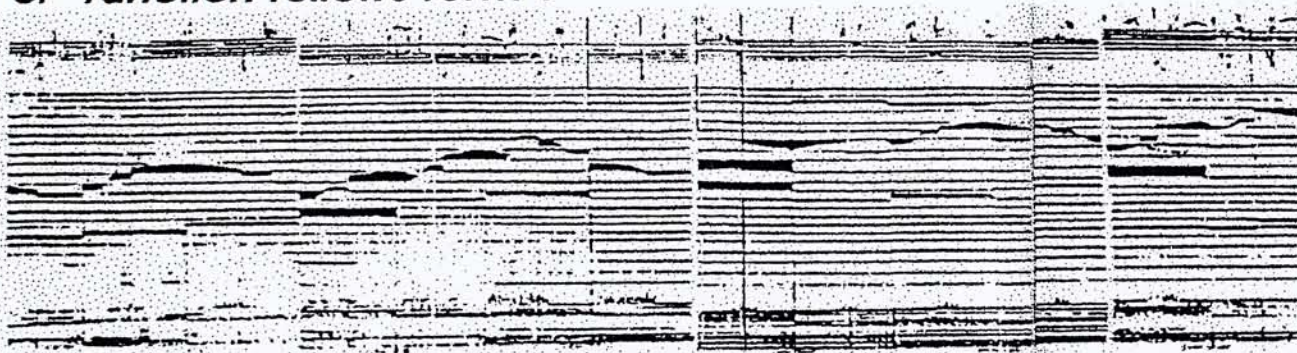
James Powell, Towards a complex minimal architecture through twentieth-century music

01 Introduction

Investigations and explorations have been carried out for long by architects to explore the possibility of utilizing musical idea into architecture. According to the basic observation, their design approach can be divided into four categories:

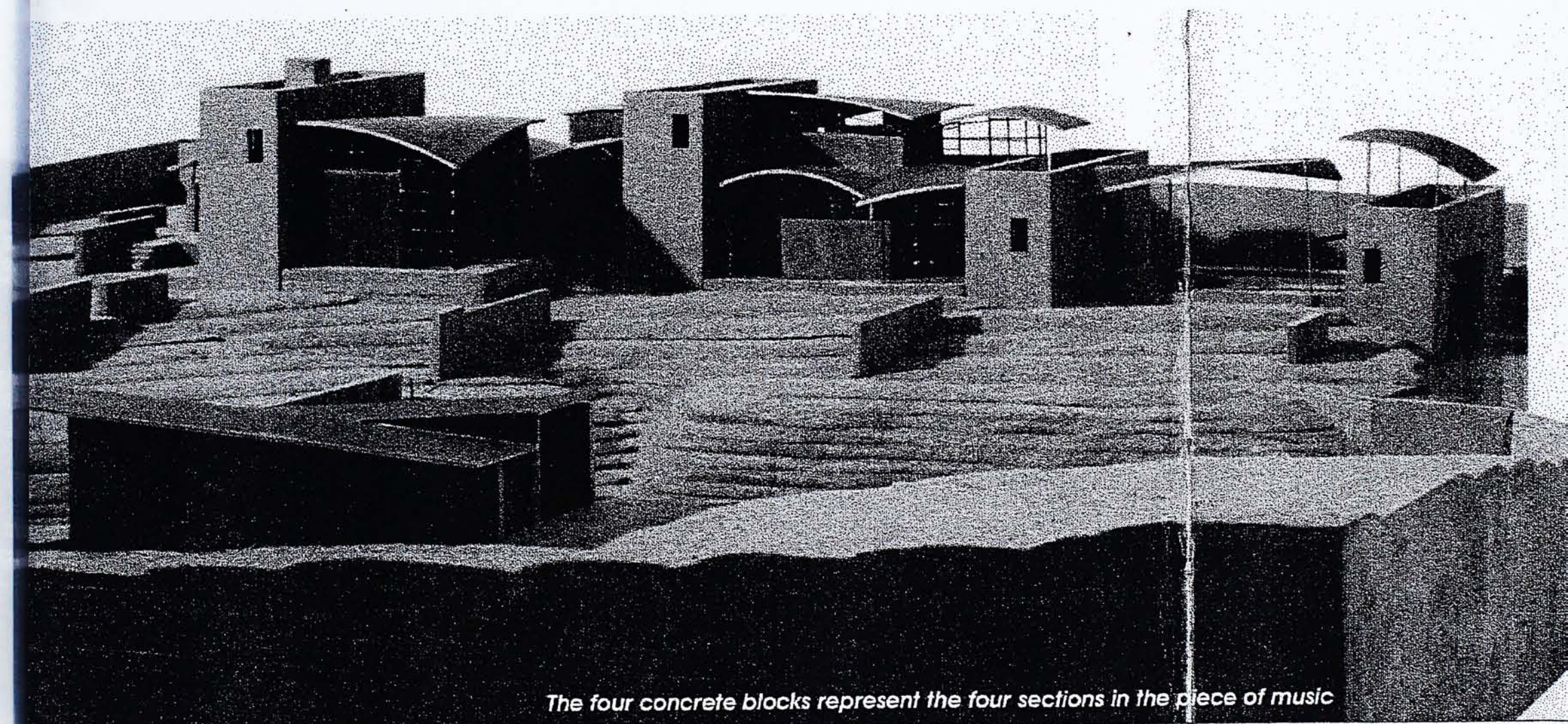
- a) Translate Music Into Architecture
- b) Music as a Metaphor
- c) Design a Special Program for Music
- d) Acoustic of Music

This method is to choose one segment of music as a form generator of architecture. First it is translated into graphic and then used as an inspiration to generate a 3-D architectural form. For example, when designing Stertfo House in Dallas, Steven Holl chose Bela Bartok's Music for Strings, Percussion, and Celeste as inspiration and form generator. He imagined the 2-D graphic of the music as free flowing roof above the house. The four heavy concrete blocks in the house actually simulate the four sections in Bartok's music. In this case music is used as an inspiration of the envelope of the building. Although he also used golden section to work out the proportion of the plan of the building, the functions and activities inside the building is nothing related to music indeed. This design approach is simply a way of "function follows form".



2-D Graphic of Bela Bartok's Music for Strings, Percussion, and Celeste

02 Translate Music into Architecture

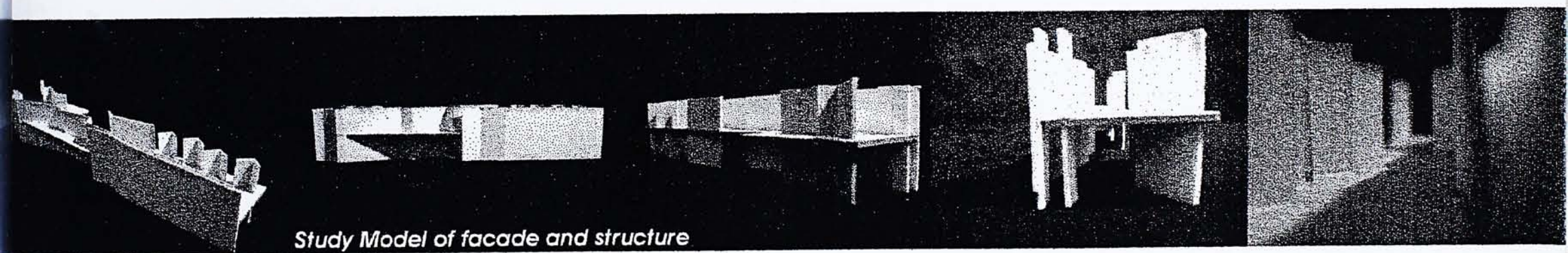


The four concrete blocks represent the four sections in the piece of music

A music piece at Baroque period by Bach is chosen to explore the possibility when a music piece is translated into a facade and structural system in architecture.

Bach, Three Part Invention, no. 1

02 Translate Music into Architecture



07

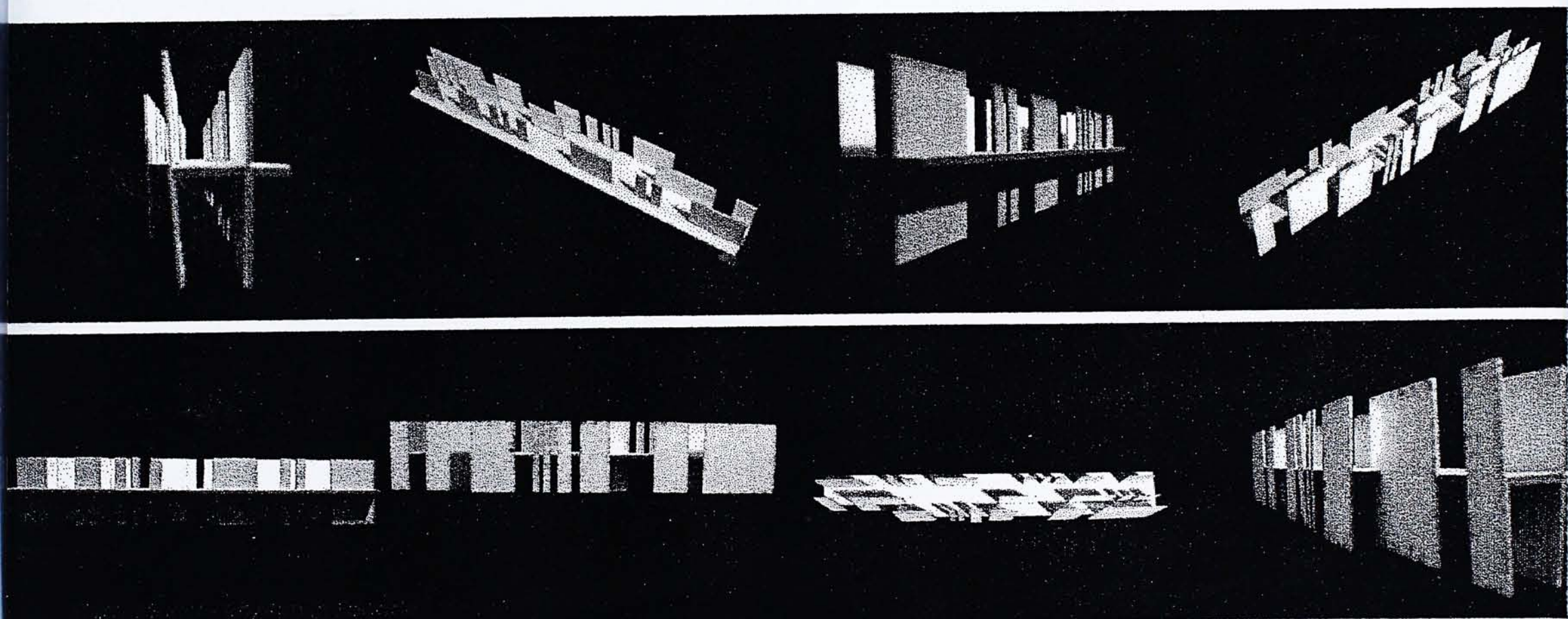
Monastery of La Tourette - Le Corbusier



03 *Music as a Metaphor*

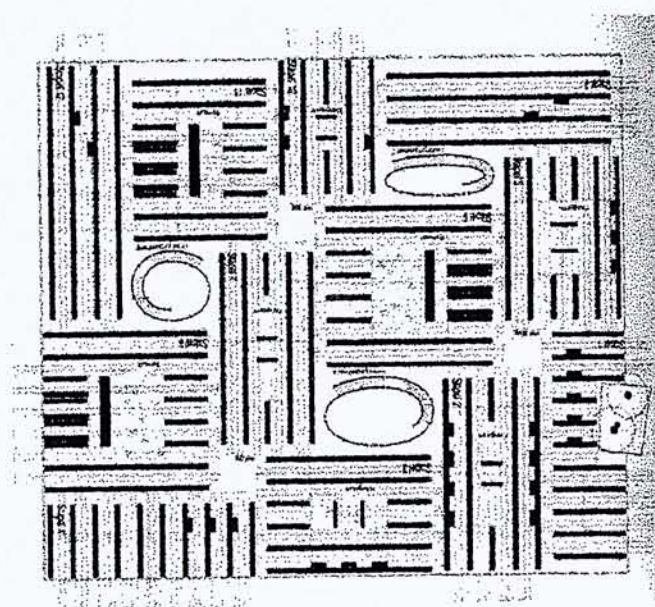
Similarities between Music and Architecture

This approach compares similar aspects of two fields, let say, rhythm and proportion, It uses the way how musician creates music as a metaphor to design architecture so as to arouse new interpretation in design process. The most common example is, architect try to play with rhythm in the façade system so as to get rid of the boring repetition of same width façade division.



In some cases, a music program is specially designed for the architecture. In this design approach, music and architecture remain as what it used to be, that is, the form of architecture is designed for fitting or enhancing the musical events happening inside. For example, the Swiss sound box in Expo 2000, designed by Peter Zumthor, is actually constructed for the accommodation of a non-stop musical performance. The sound box is consisted of 99 free stand stacked walls in which interior and exterior spaces had not been differentiated. The walls are arranged in a way that there is no predefined path inside the box. The musical event is consisted of 2 groups of musical performers: one group of performers play standard music in a fix position, while the other improvised in between the basic music by walking inside the sound box. Such mixing, interfering or improvising of music created surprises to the visitors. The maze-liked wall arrangement also leaded to unexpected discoveries and reveal the delights of browsing, that much enhanced the surprises that created by the improvised music performance.

04 Design a Program for Music



*No predefined path - free standing walls that
do not differentiate interior and exterior*

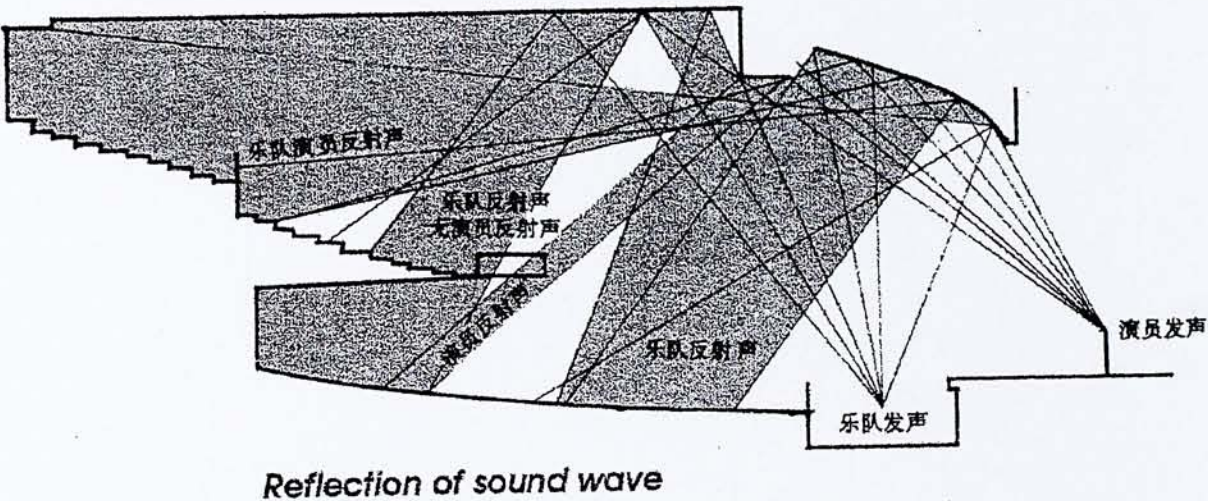


Basic Sound Musician

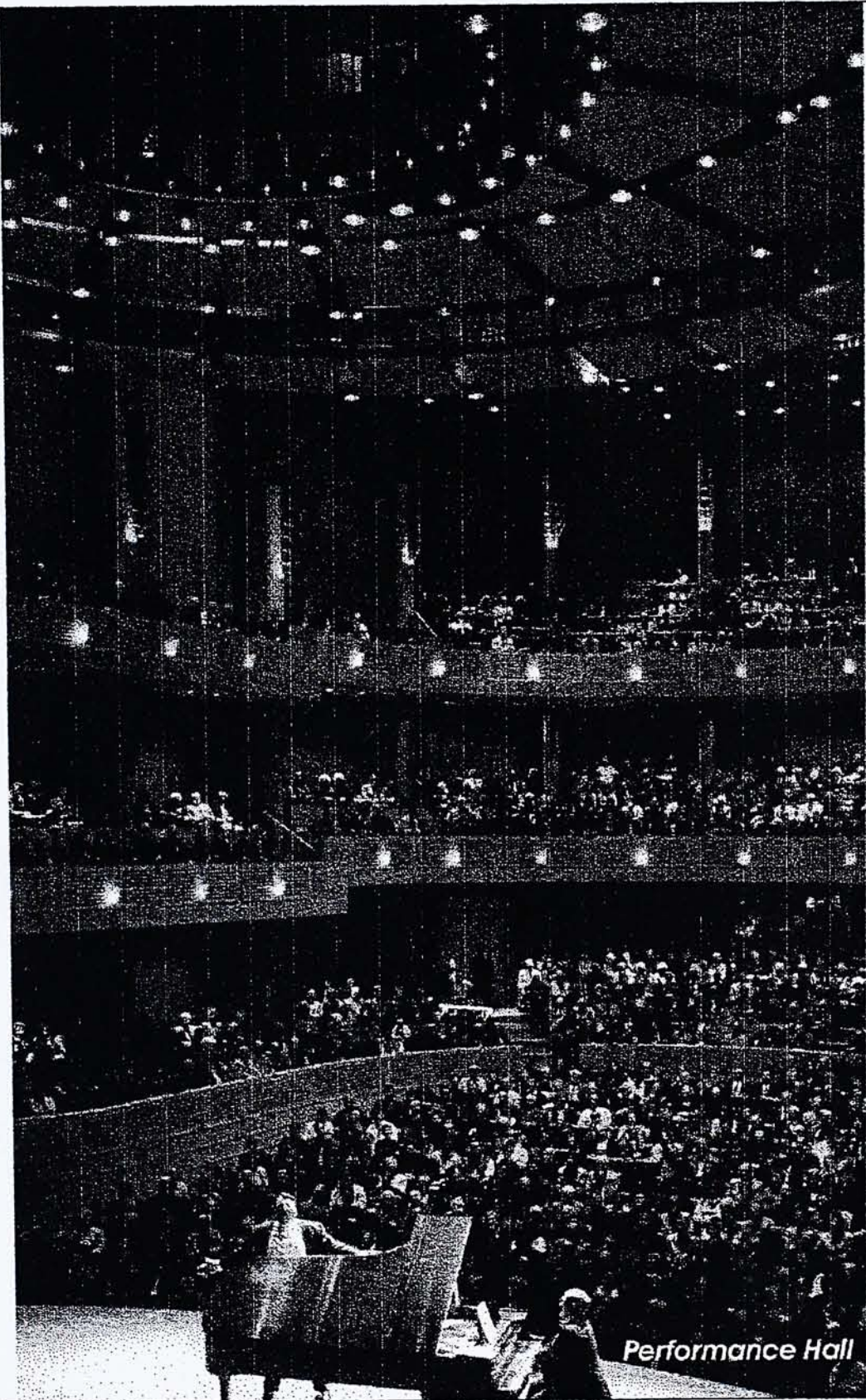


Improvisation musician

This is a scientific approach that often used when designing concert hall. It concerns how well the sound wave performs in the space rather than using music as a design method. The form of the hall is generated based on the layout of performance stage, the audience's seating and the way that sound transfers and rebounds from the performers to the audiences.



05 Acoustic of Performance

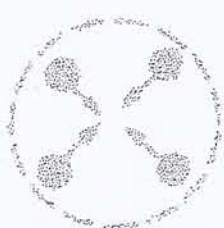


Layout of Performance

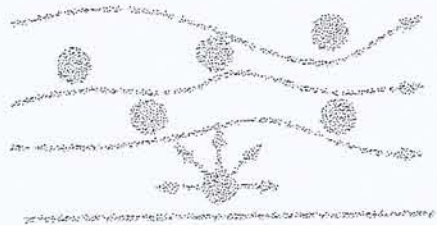
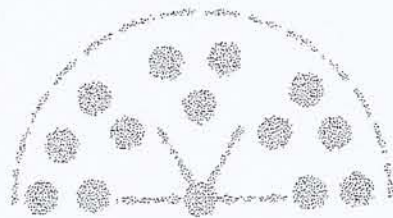
Based on the basic observation of different musical performances, it is found that they always perform in circular pattern so as to get an interactive relationship between performers. For example, the orchestra's layout is semi-circular so that all members can keep an eye contact with the conductor.

The Way We Look at Street Performance

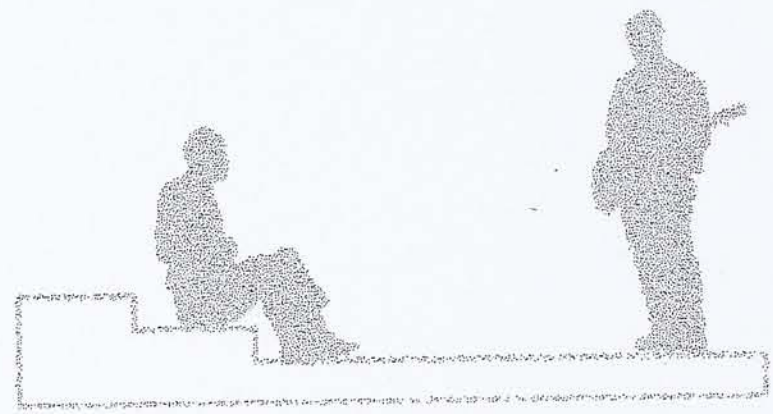
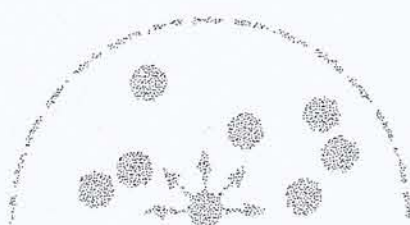
As for the music performances along the street, pedestrians can bypass or stay to enjoy the music according to their own preference. Although there is no proper seating for the audience, they always gathering around the performer(s) in circular pattern due to the distribution of sound and the "multi-2-one" relation between audience and performer(s). If there are stairs around the performer(s), audience always take an advantage of it as seating.



Musicians group in circular form to perform music

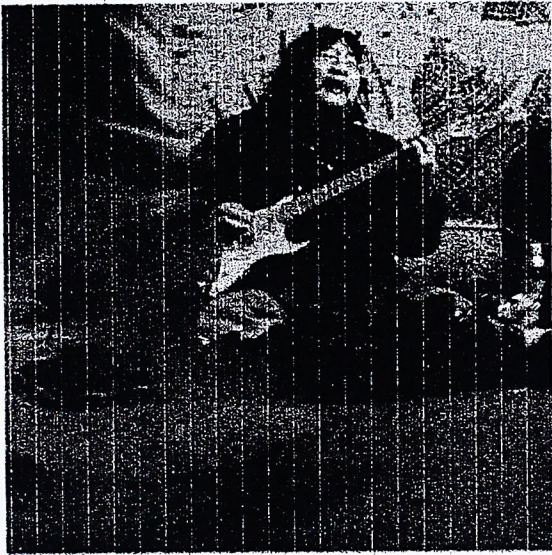
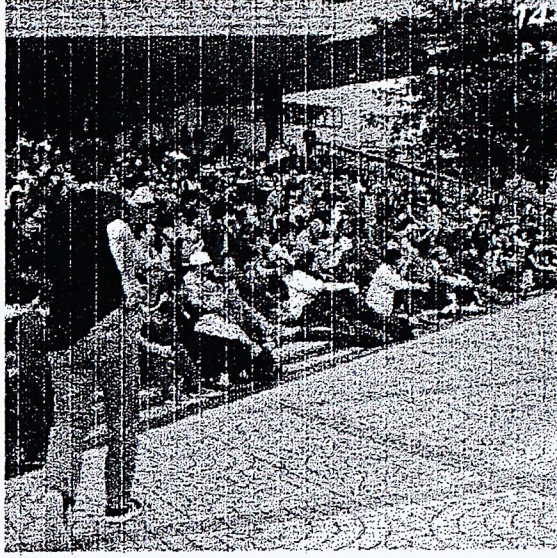
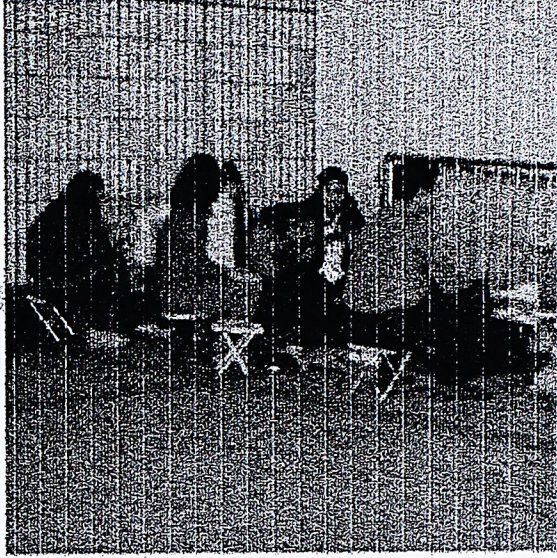


Audiences bypass or gather around the performer



Stair as seating

06 Study of Street Music Performance



Issues around the site

Congestion

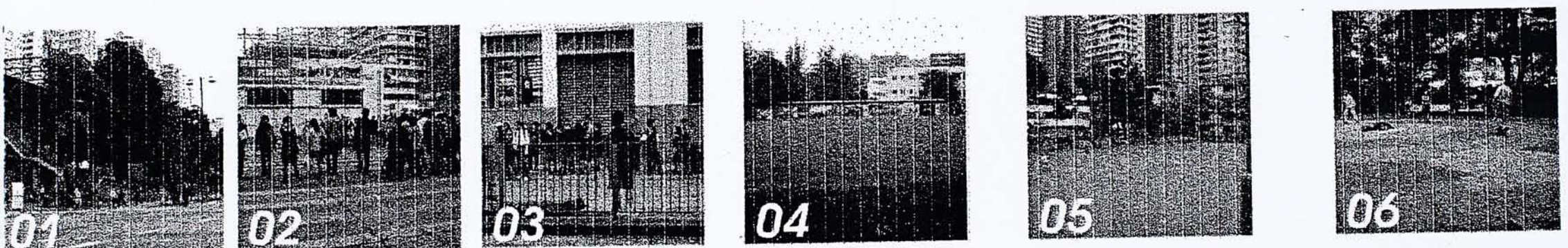
Paths for pedestrian are narrow and cannot withstand the busy pedestrians' flow of Mong Kok. Very often, pedestrians need to wait for long time to cross the roads which leads to serious congestions of the paths.

Lack of Open Space

There is lack of open space in Mong Kok and the existing open spaces are not enough or not well-designed so that the users are only the people living there rather than the whole public.

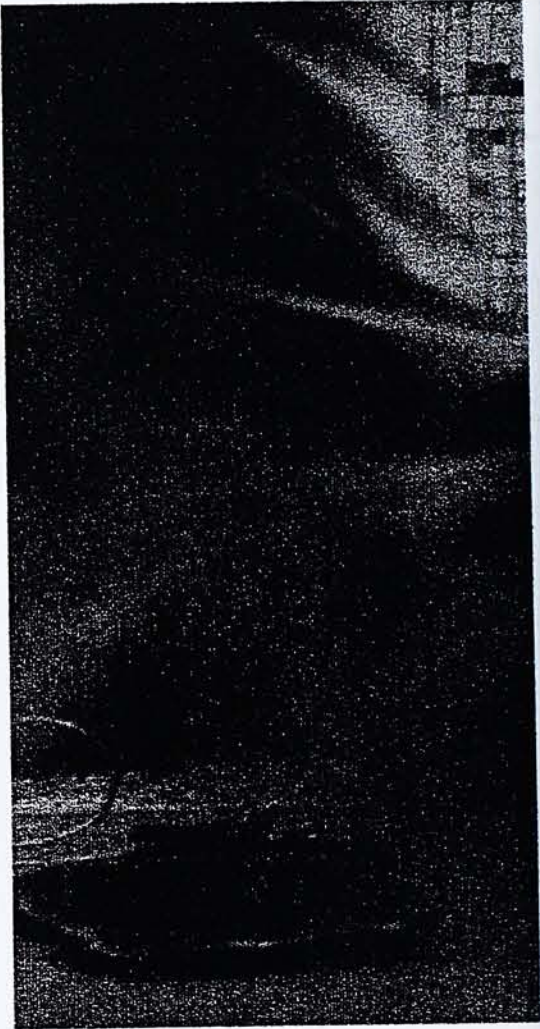
Location of Site

The site is located at the boundary of Mong Kok that has high potential to be developed as an open space for public function. However it is now occupied by an old government building that gives an unpleasant ending for people who leave Mong Kok by train. The district actually loses the characteristics and rhythm of Mong Kok. The site may be used as, in fact, a buffer zone to relieve the congestions nearby.



07 Site Analysis

There are usually groups of street musicians who often perform outside the entrance of Mong Kok KCR Station. What they perform is the first or the last impressed sound that people experience along the path. The soft and light sound experience is contrast to the noisy traffic environment of Mong Kok. The street music terrain aims to provide a better open area for street musicians to perform music which enhances and lengthens the music atmosphere for people traveling around. This not only relieves the stress caused by the busy and crowd environment, but also a nice resting and walking paths which benefits both the street musicians and audiences.



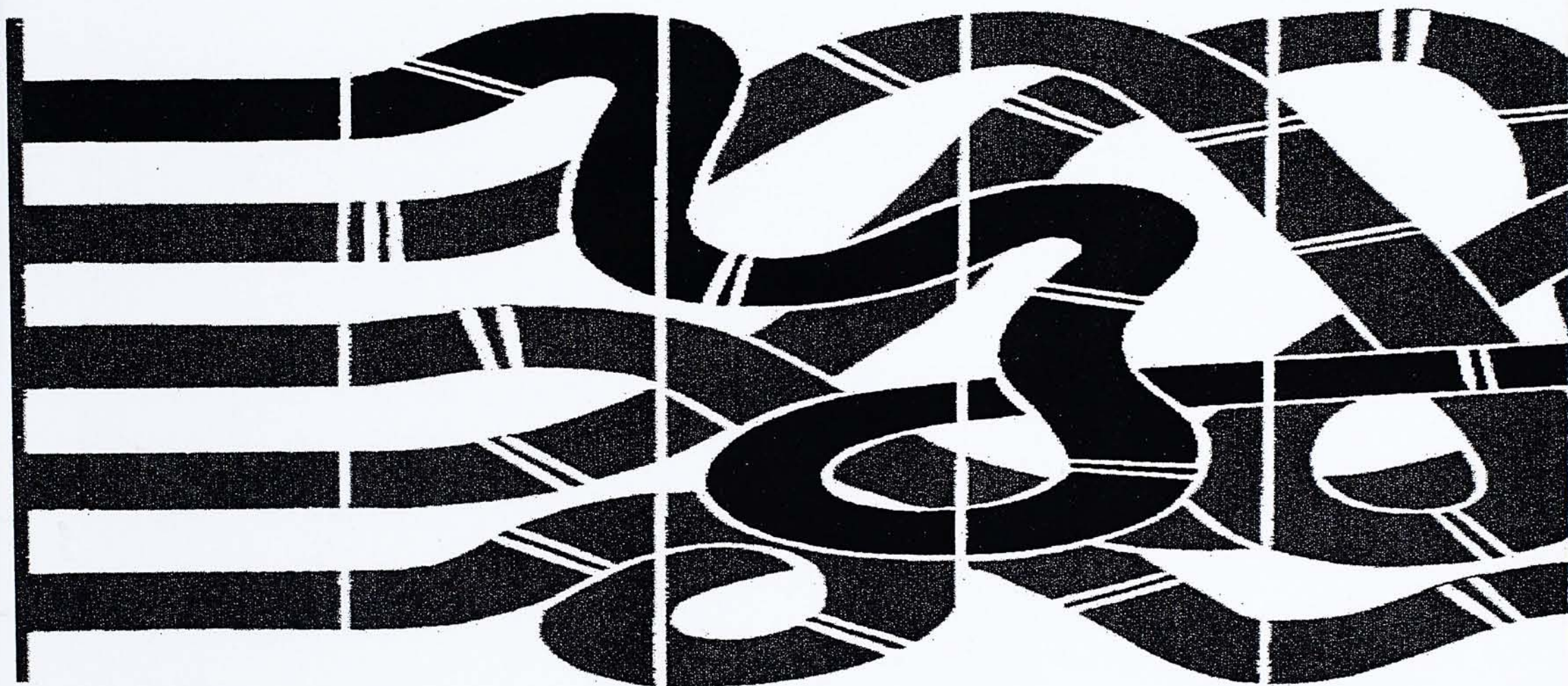
08 Design Intention



Music for "n" Players

This is a graphic score for improvising. The piece can be played by five groups of musicians, or by a single musician, or any number between. In a large ensemble a conductor would indicate the (equal) time divisions, though the piece may last any length of time. The players has to make his or her own decisions about what happens when the time division line (the white vertical) cuts the black reading line ambiguously (i.e. when it travels along the reading line or crosses it twice). Only readers of the top line play uninterruptedly throughout the piece: others are silent whenever their reading line is crossed by another. When a reading line is crossed by itself, at the end of a loop, play pppp. (Text based on the original of the composer.)

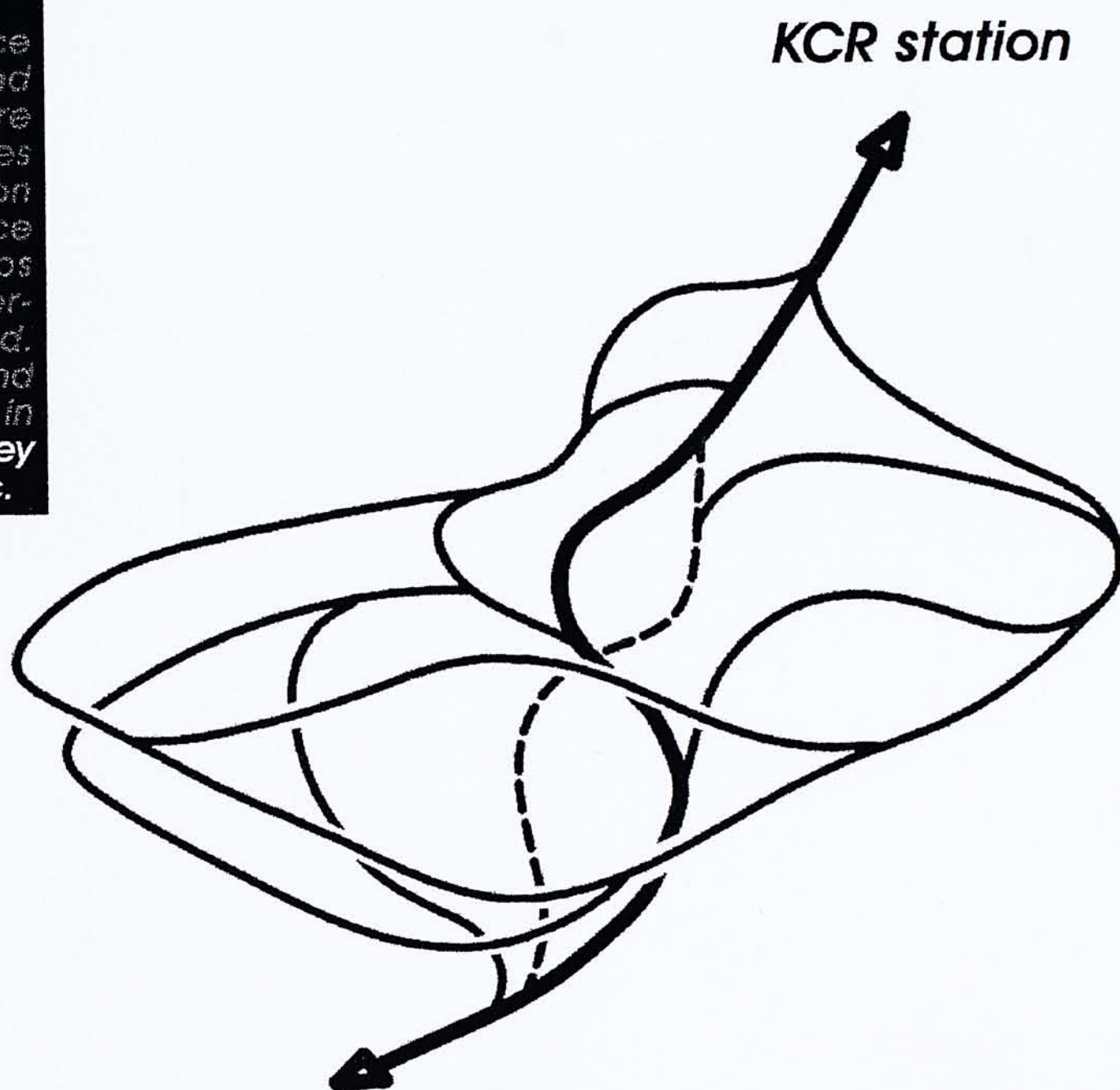
08 Design Intention



Music for n players, by Tom Phillips

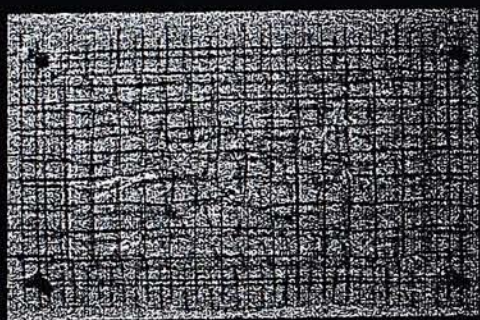


The design intention is to induce the freedom of playing and listening music into architecture by human circulation. It provides numerous choices of circulation patterns and performance space in which various relationships between the circulation and performance space are created. Visitors then travel freely and listen to music along the paths in the terrain – **once they walk, they listen to different kinds of music.**

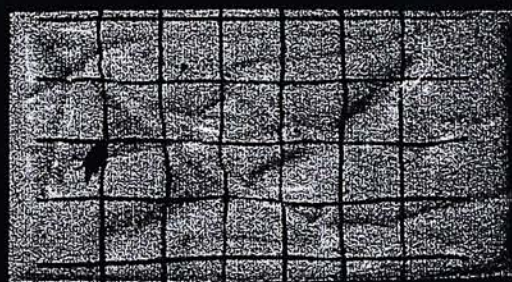
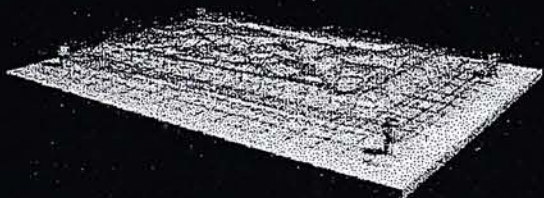


Mong Kok

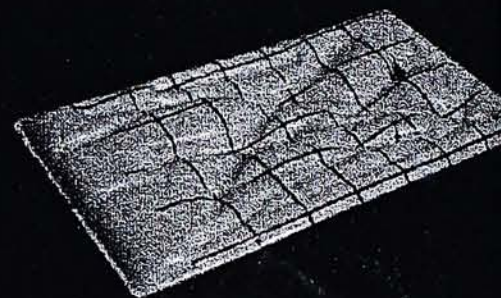
08 Design Intention



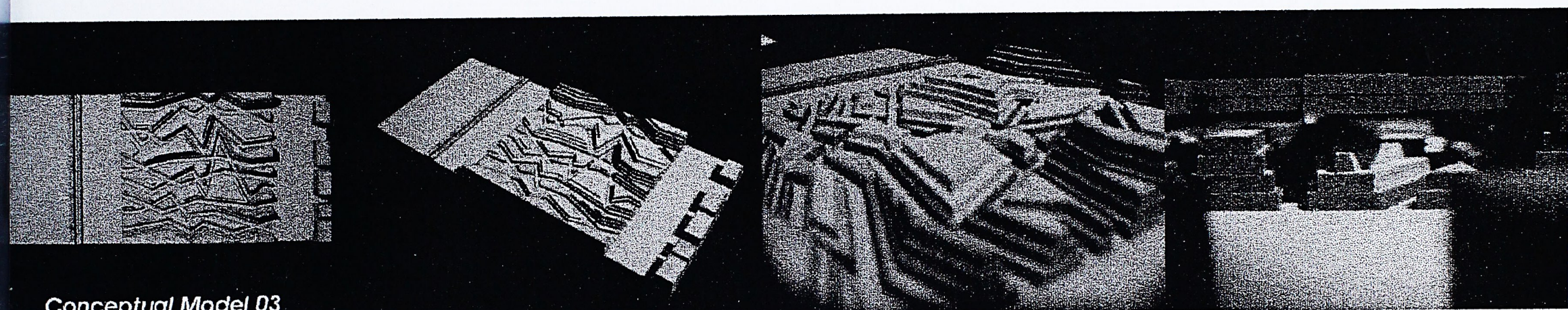
Conceptual Model 01



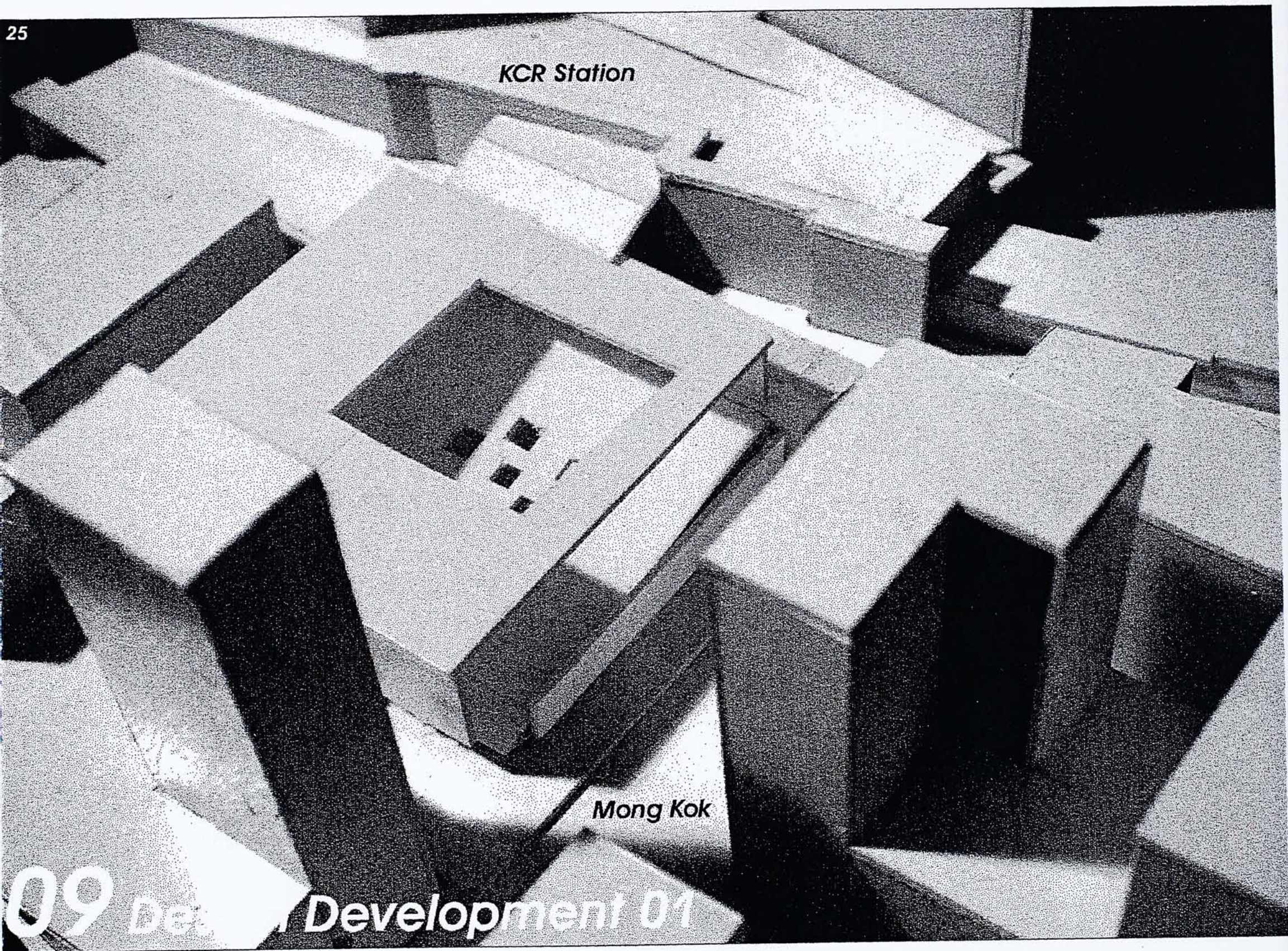
Conceptual Model 02



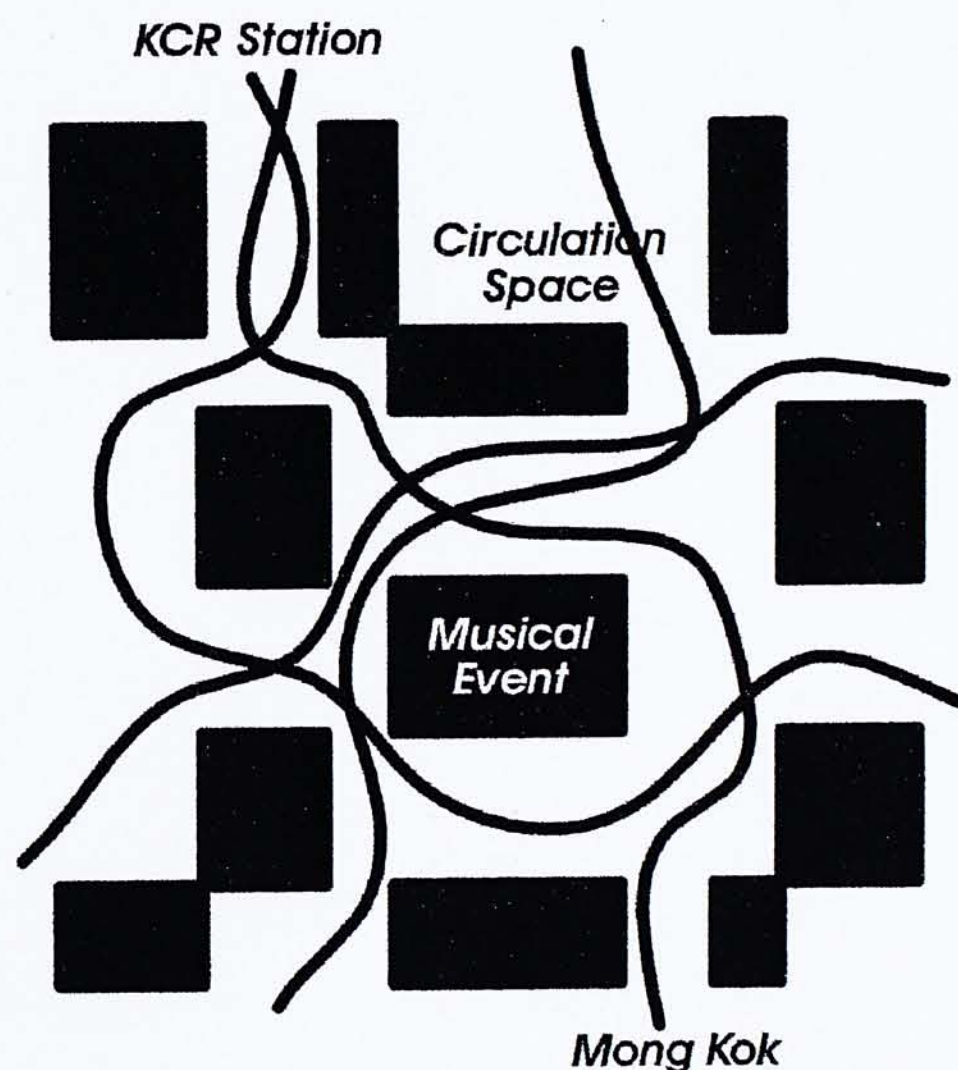
08 *Design Intention*



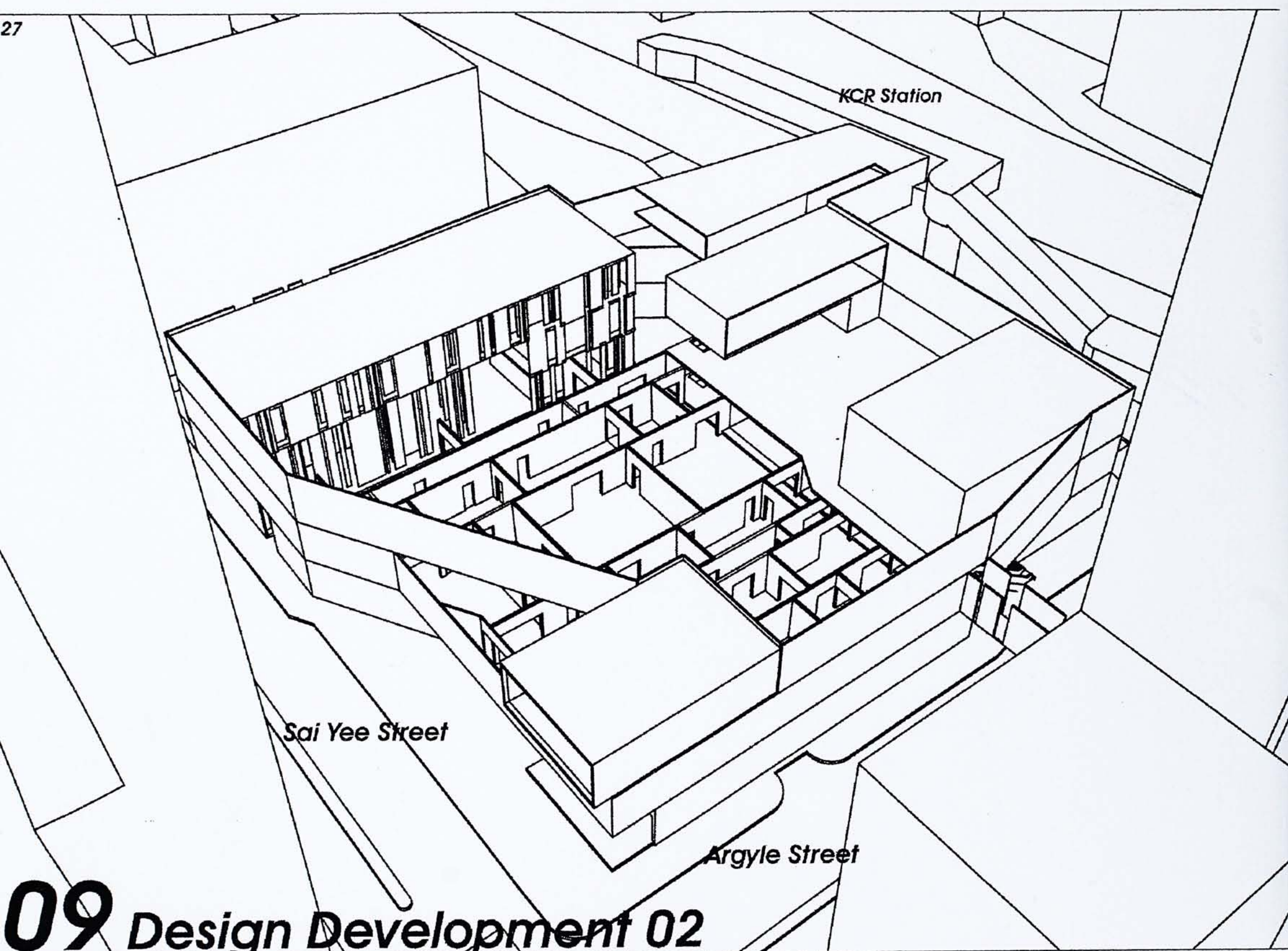
Conceptual Model 03



A wide ramp is used to connect the circulation from Mong Kok Area to the KCR station. There are musical performance spaces on the ramp so that people can experience the nice music played by street musicians when they move along the circulation. The envelope is to provide a more enclosed external area for musical performances and to reduce the traffic noise from Argyle Street and Sai Yee Street.

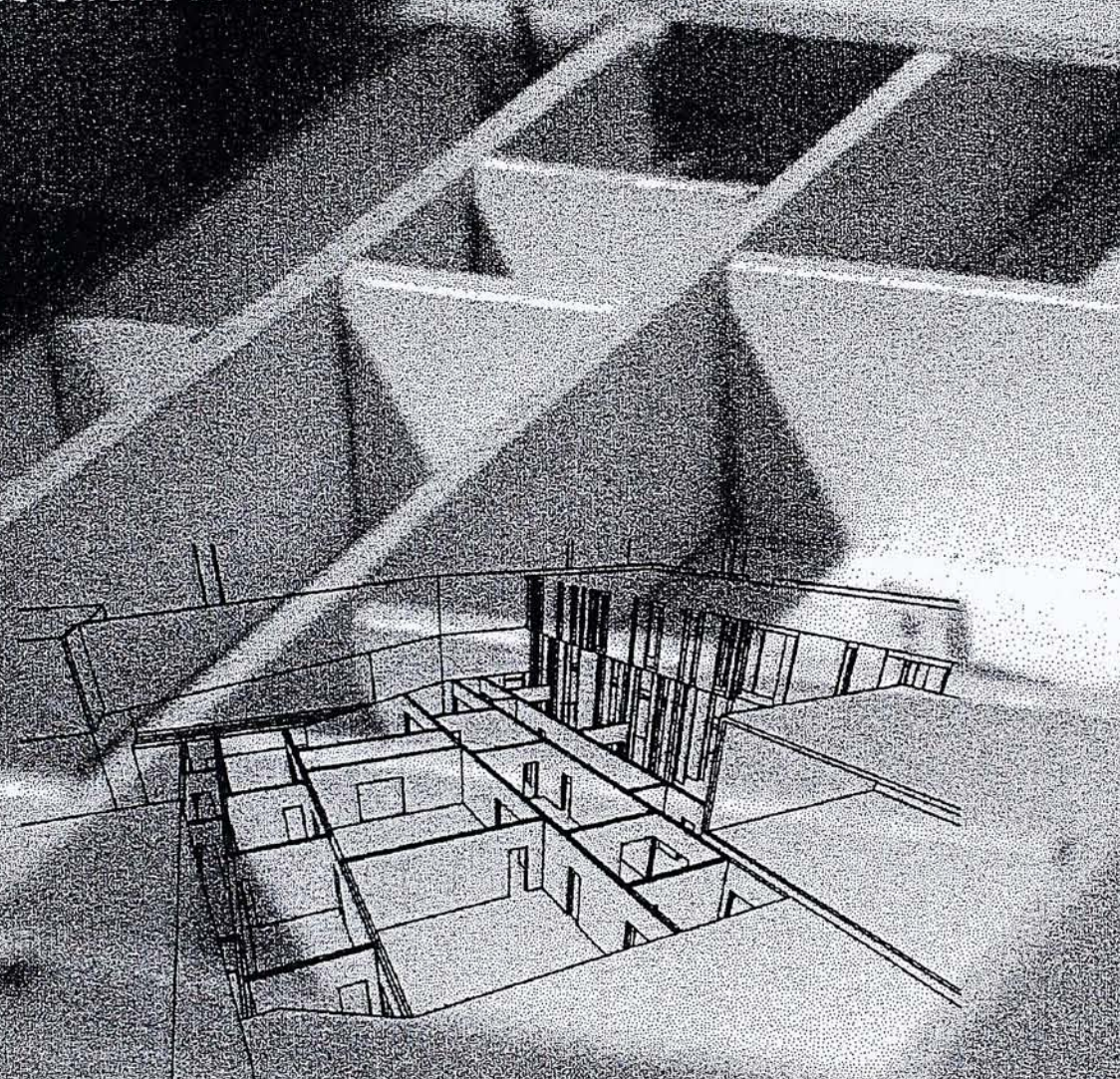


09 Design Development 01



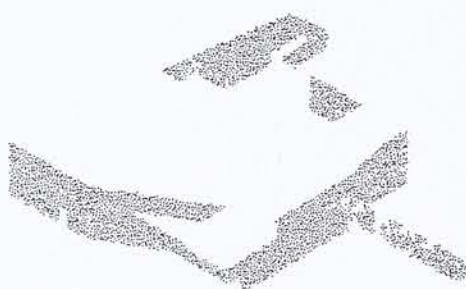
09 Design Development 02

The circulations and performance spaces are merged together by using a grid wall system. Musicians can perform everywhere inside the space. The performance spaces share the same system with the circulation rather than standing barely as an object in the previous scheme. These connected spaces provide chances for the users to find their own way to what they want to listen and watch inside the open maze.

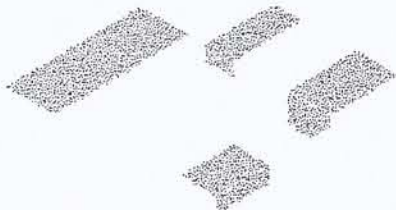


Mong Kok

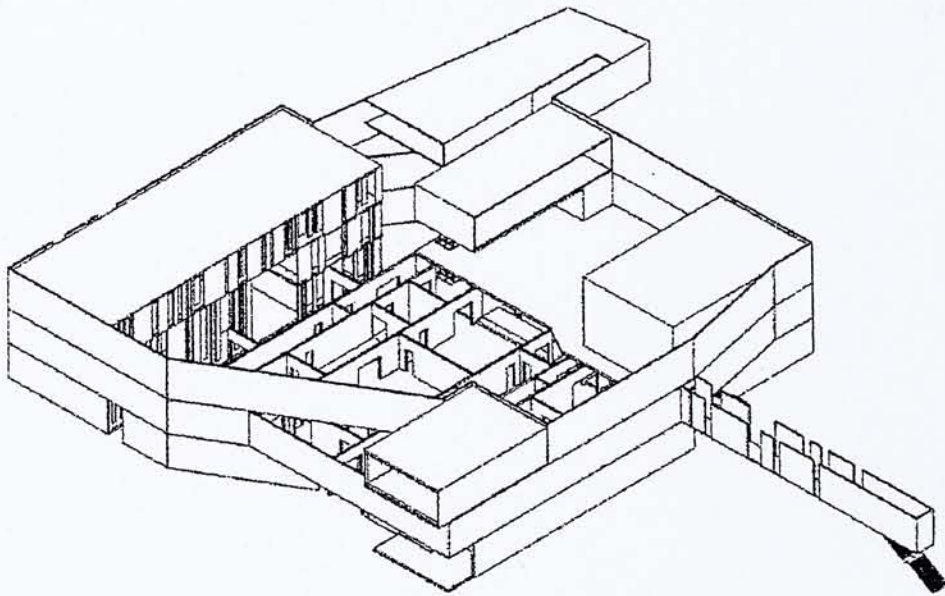
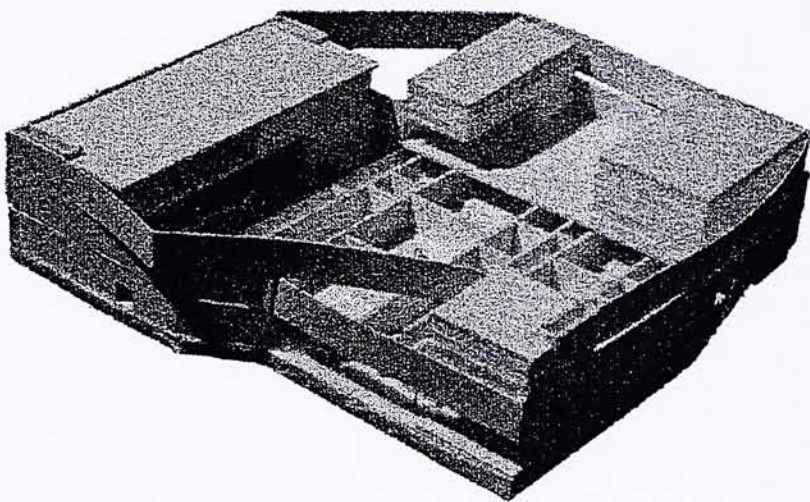
Facade

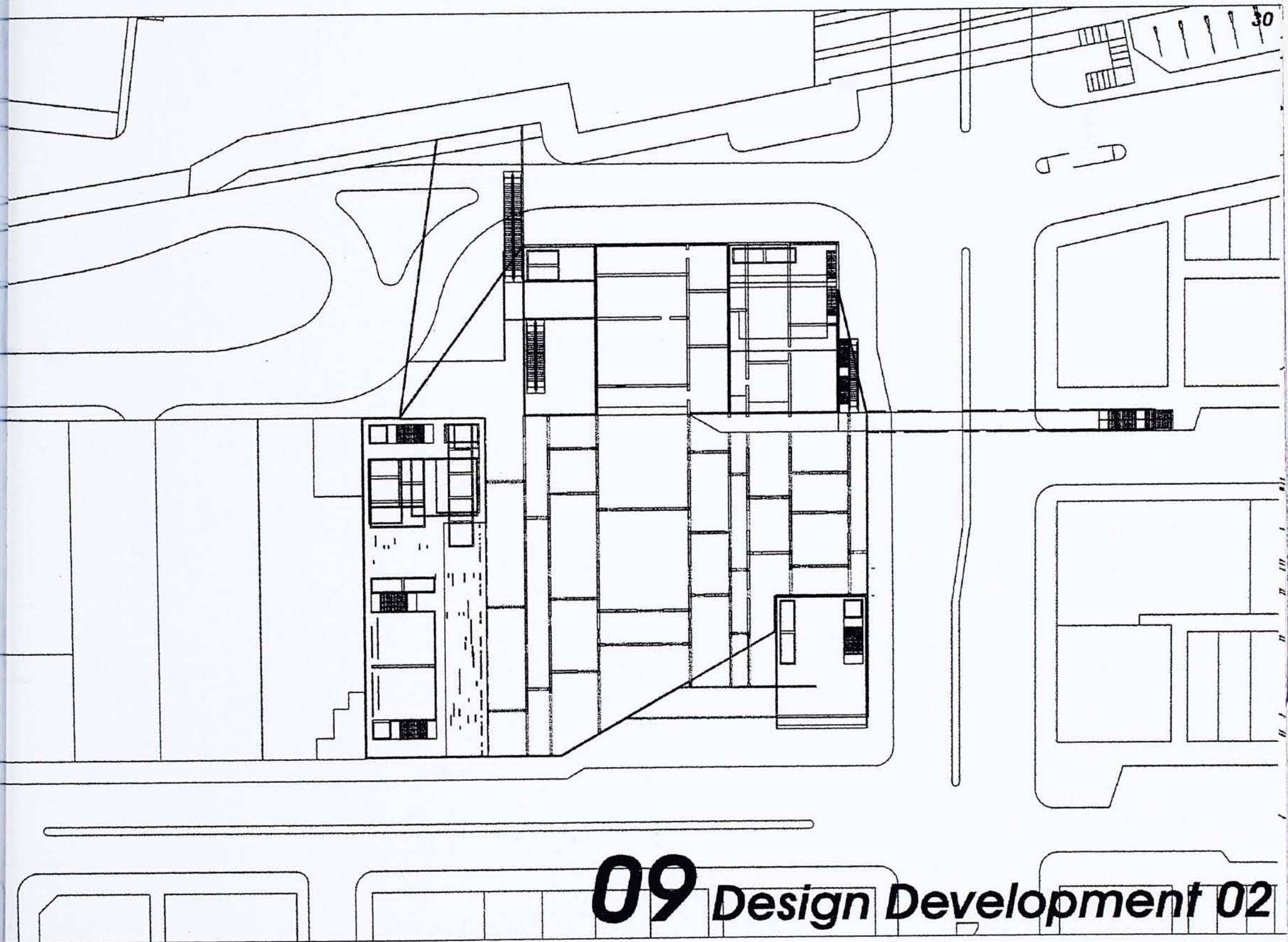


Volumes

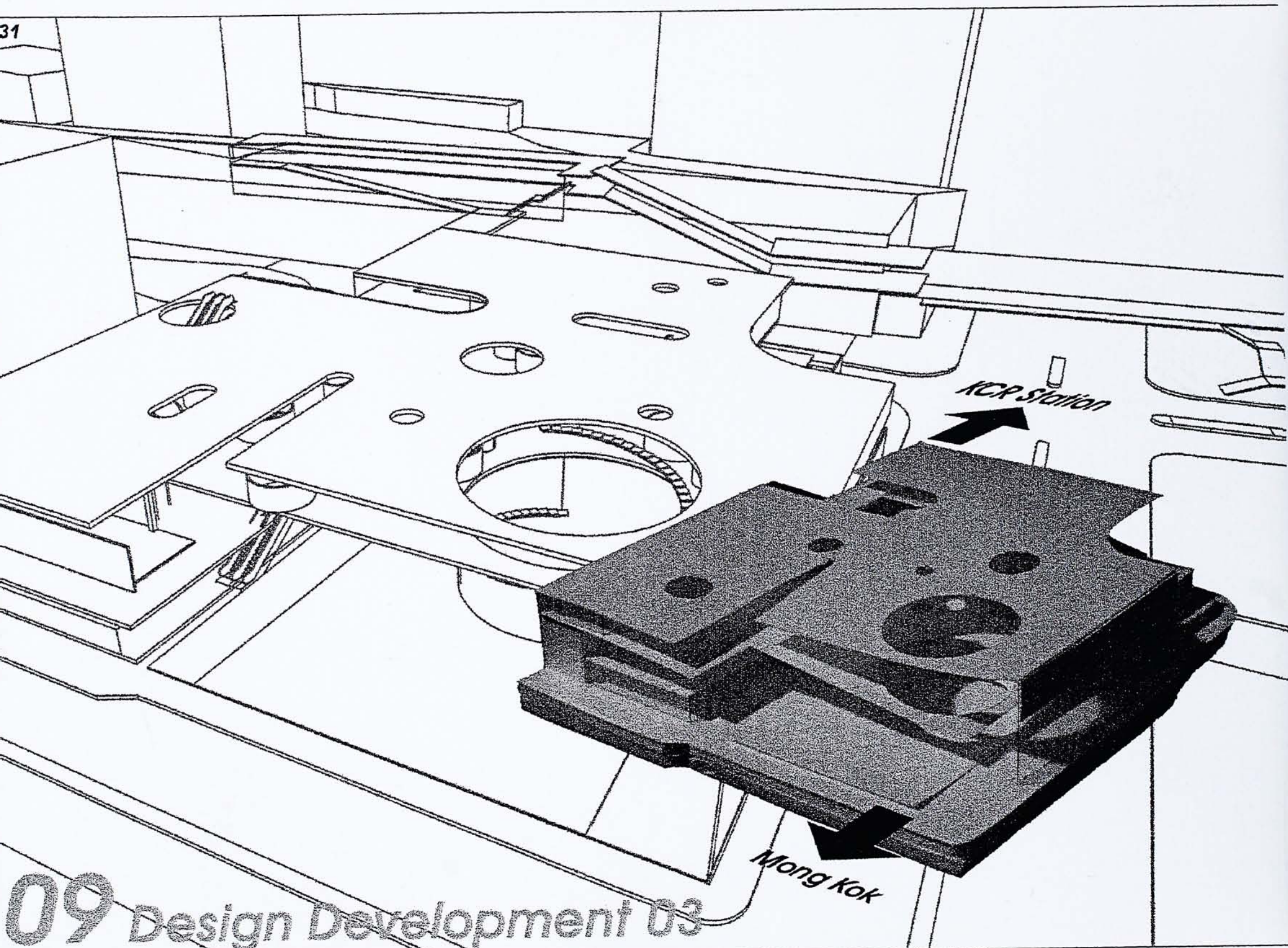


Performance Spaces





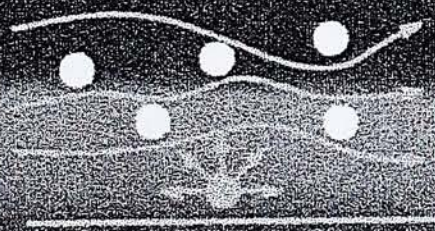
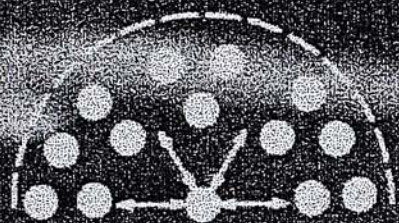
09 Design Development 02



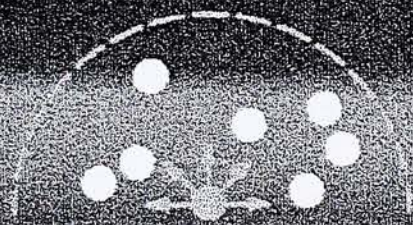
Circular performance spaces are more preferable according to the way audiences' gatherings around and how musicians perform. The circular performance spaces also enhance the flow of circulation around them.



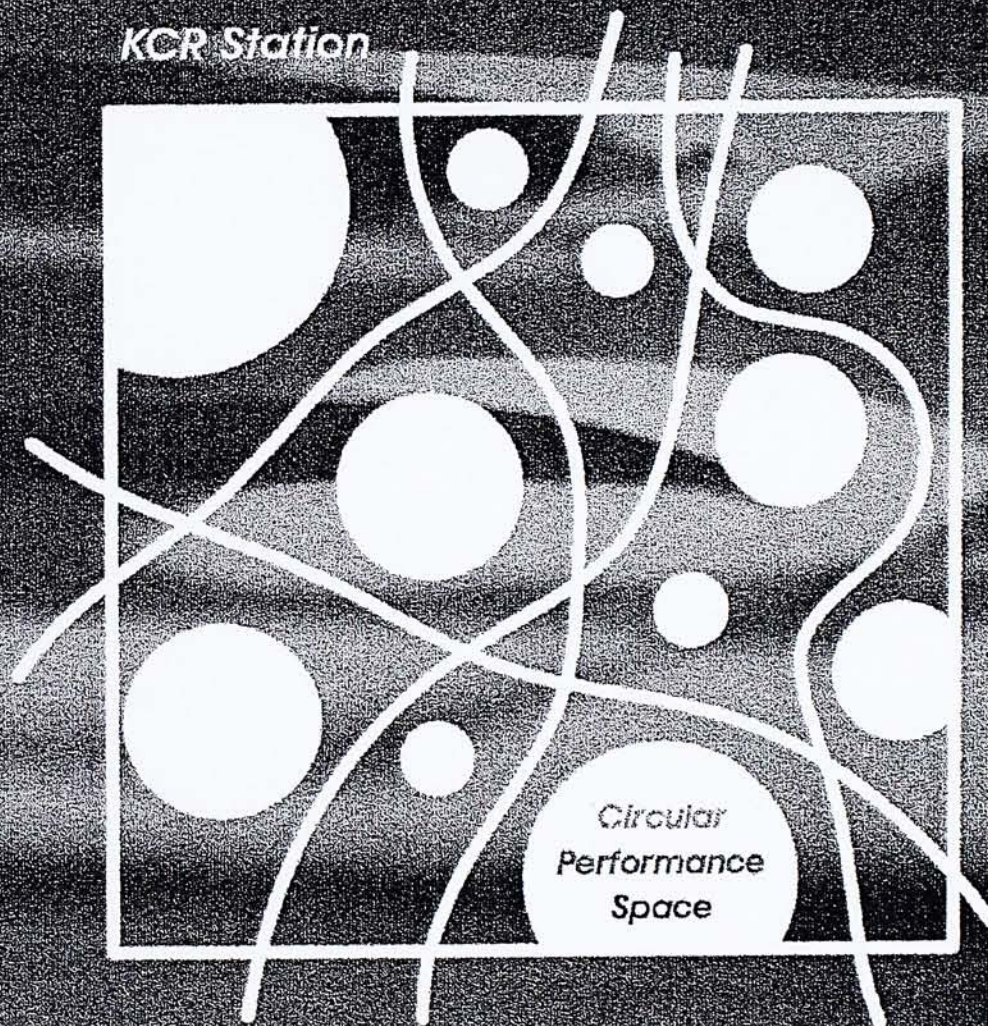
Musicians group in circular form to perform music



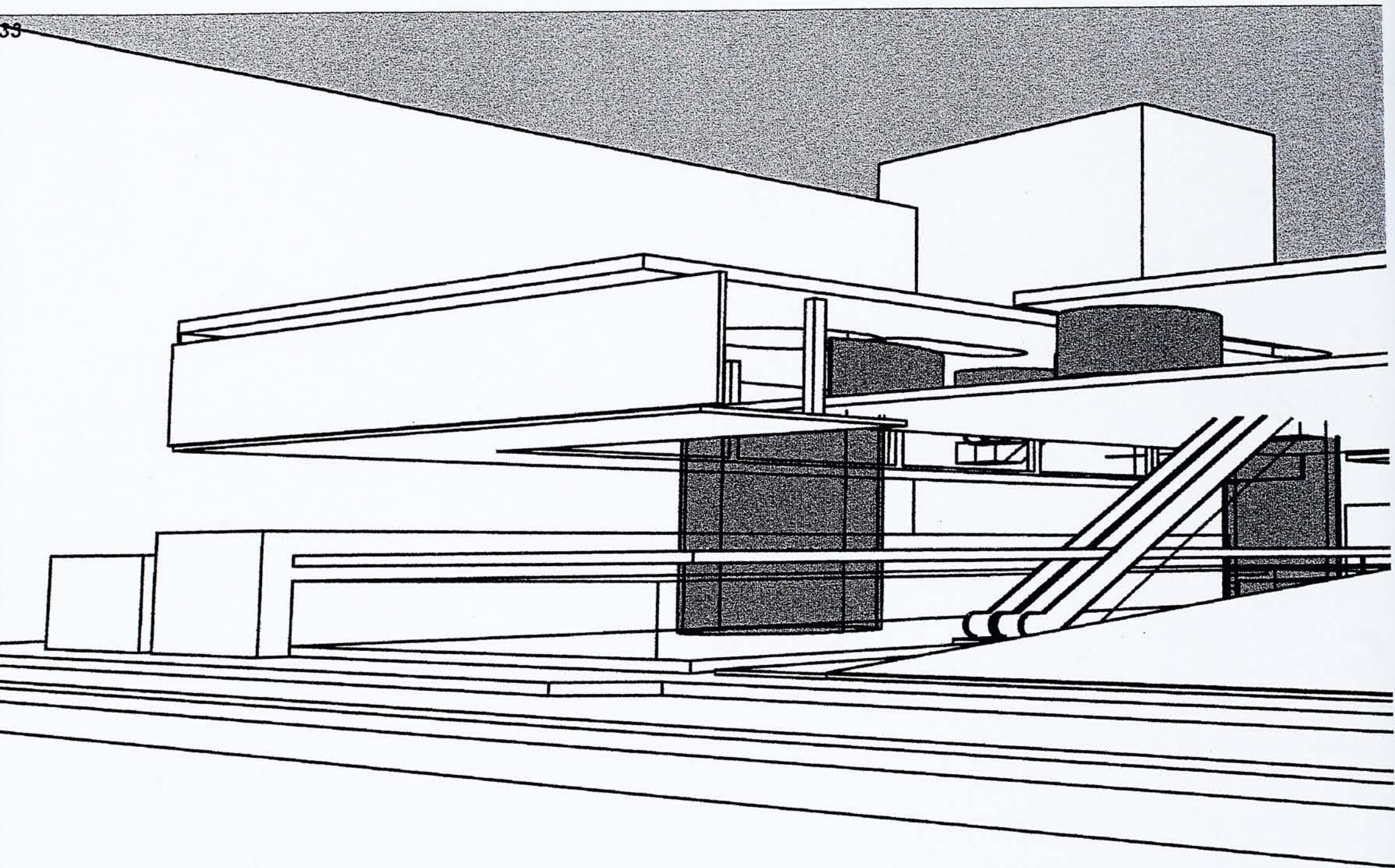
Audiences bypass or gather around the performer



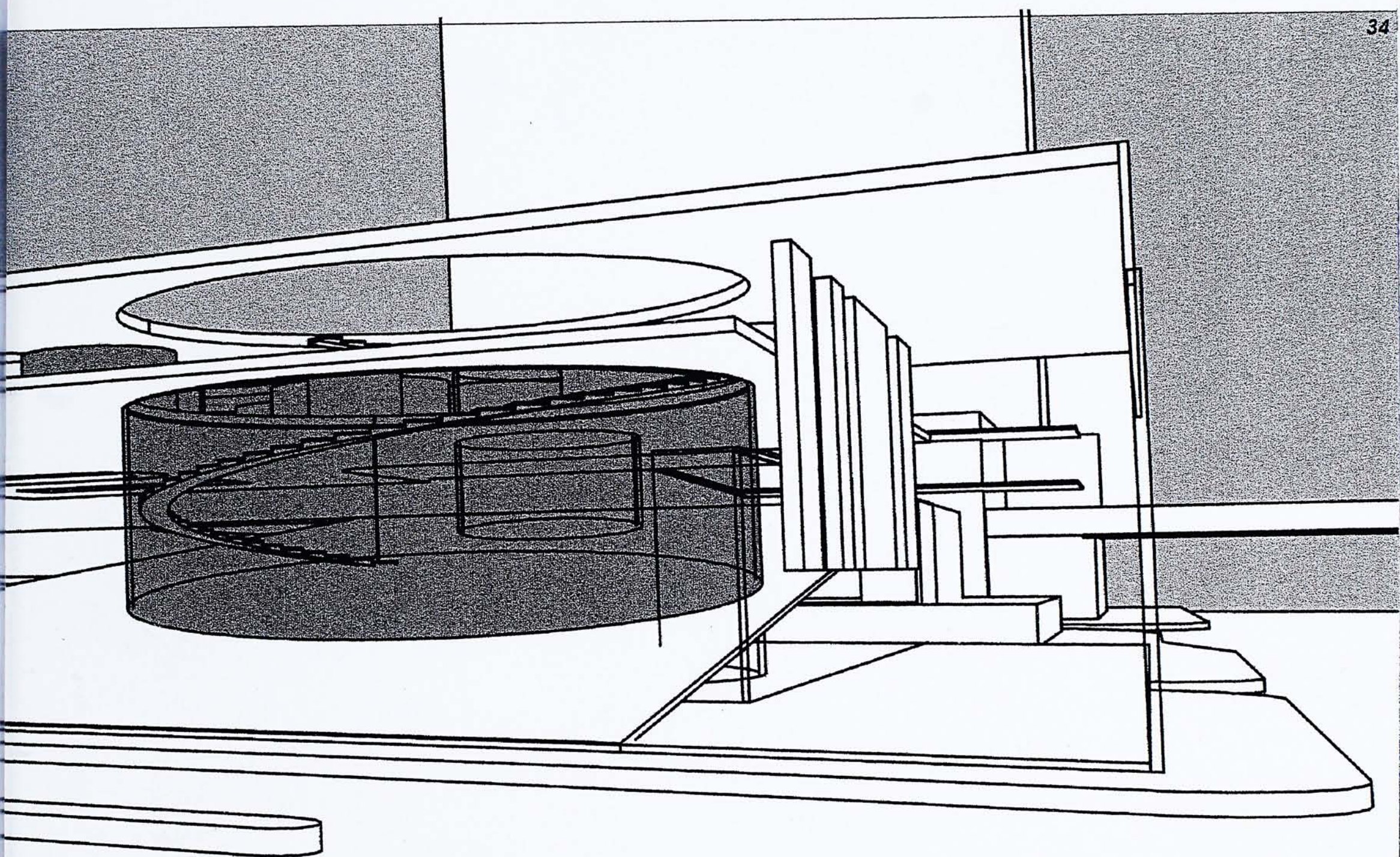
KCR Station



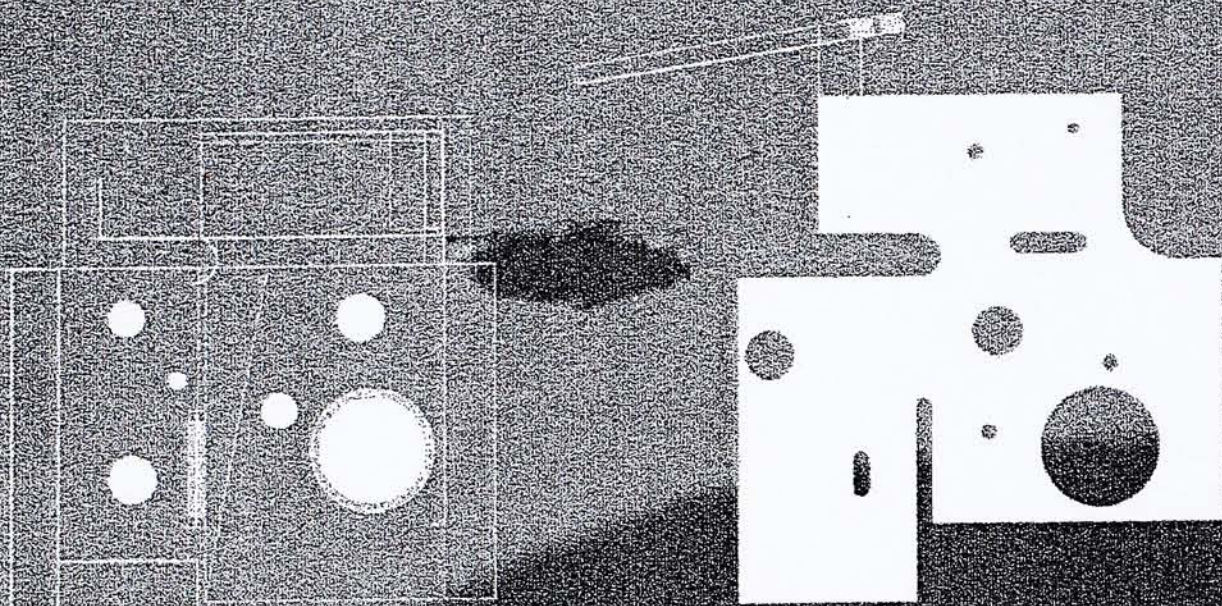
Mong Kok



Main Entrance View

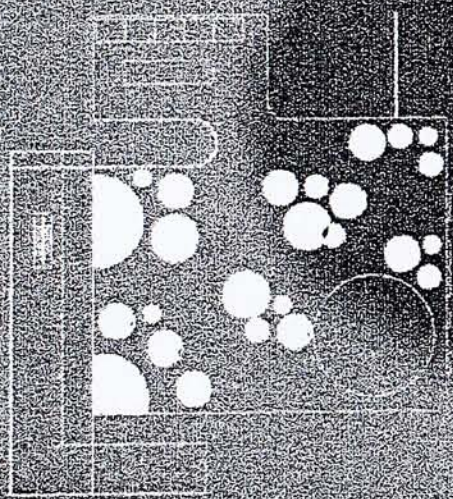


09 *Design Development 03*



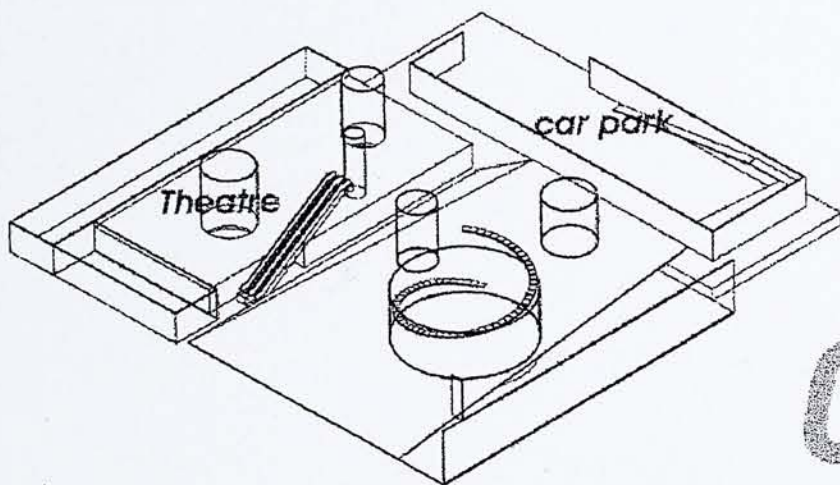
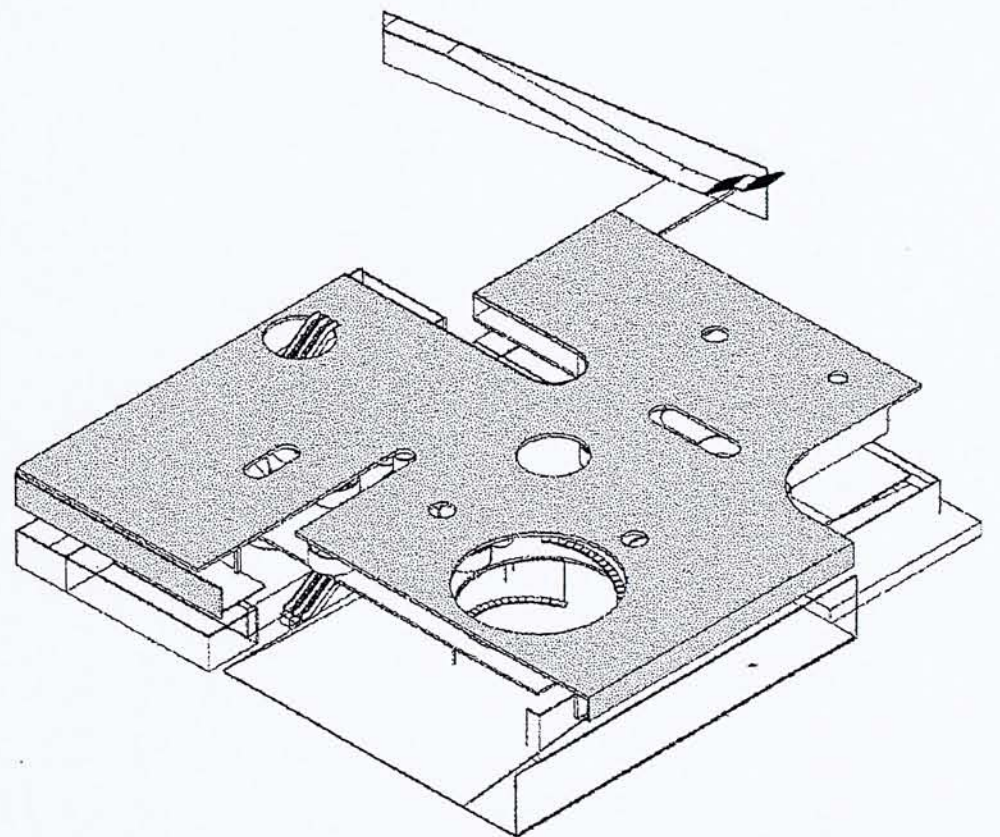
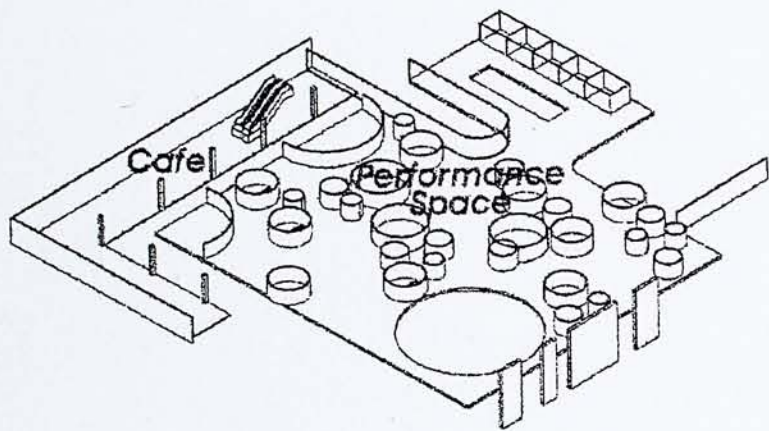
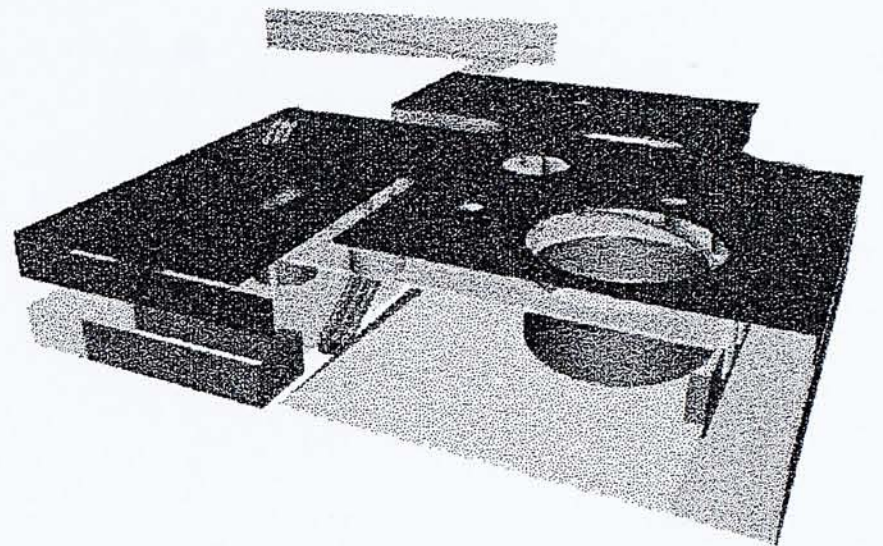
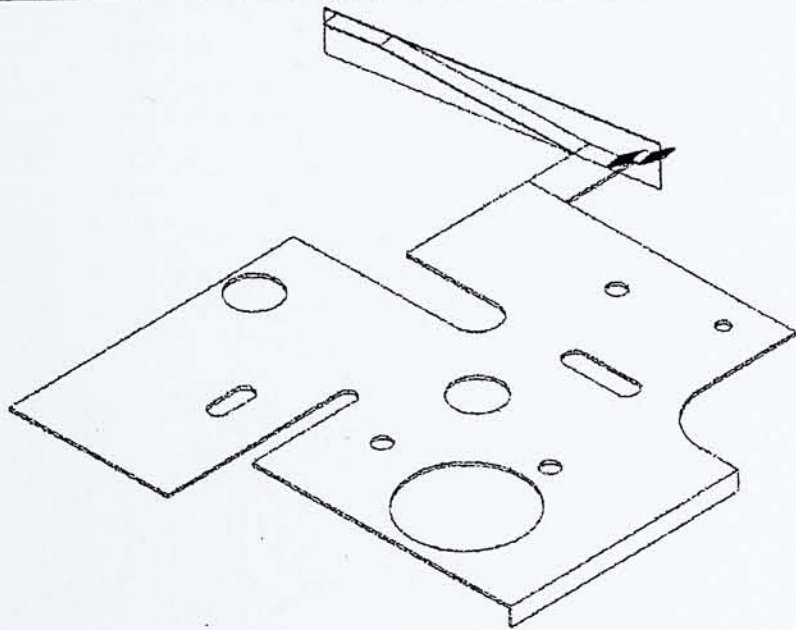
Ground Floor Plan

Roof Plan

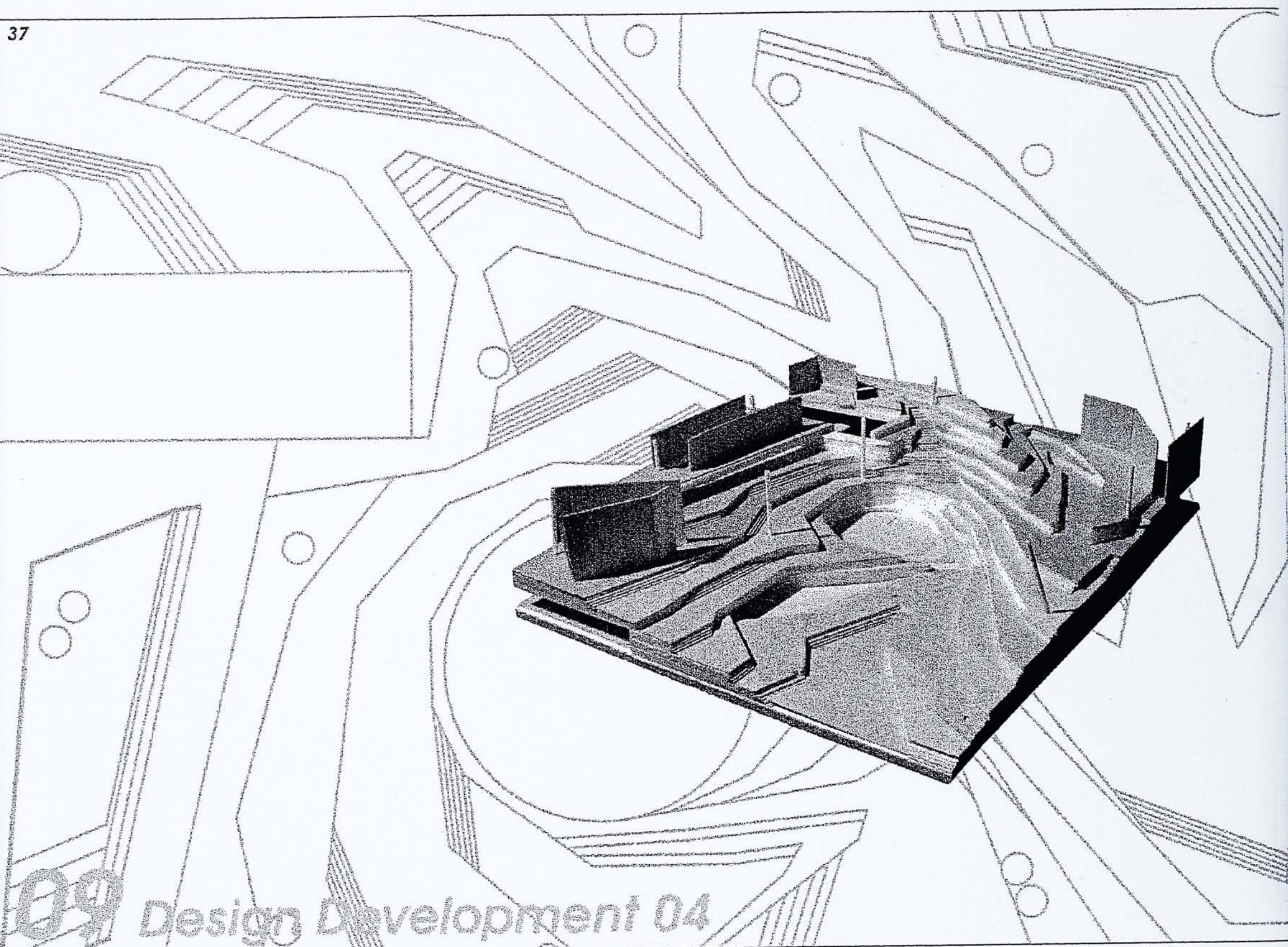


First Floor Plan

09 Design Development 03

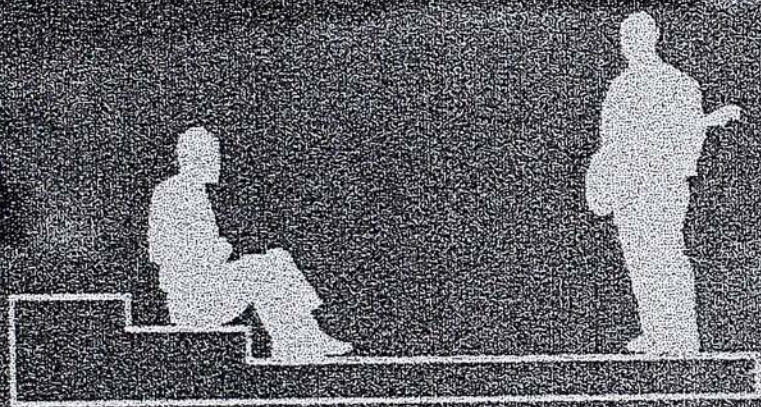


09 Design Development 03



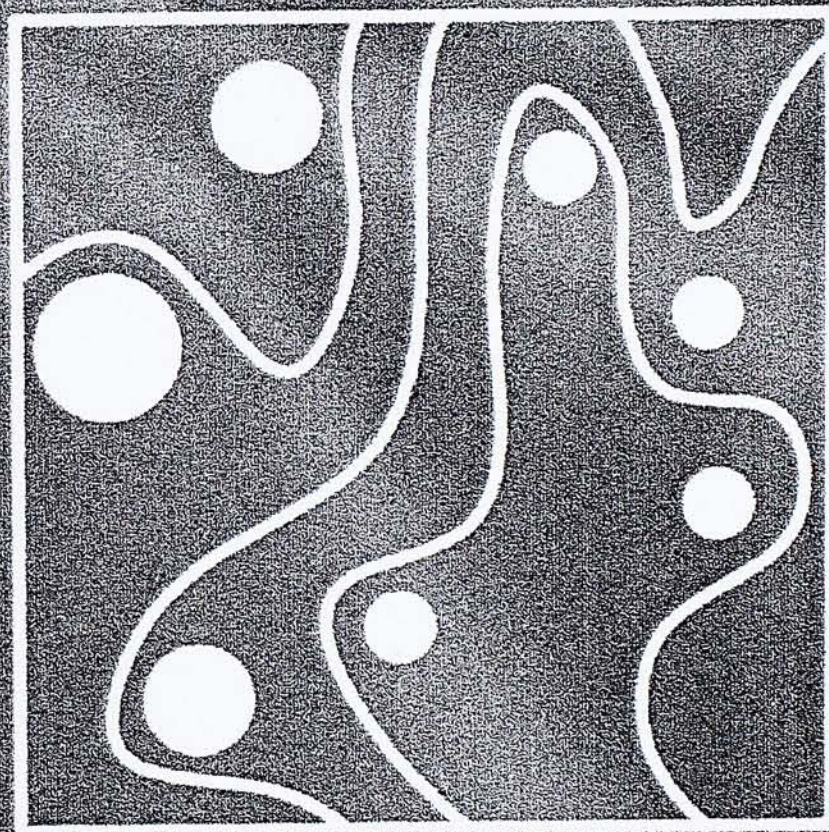
09 Design Development 04

Stairs play an important role in street music performance. Stairs around performance spaces always act as seating for the audiences. In this design development a new layer of landscape formed by stair is inserted to the performance areas so that it not only acts as an element to connect higher level in circulation, but also seating element for street music performances. The landscape stairs curve around the circular performance stages so as to let the seating direct towards the performers. Therefore the landscape is shaped by the performance stage on it and the circulation pattern. Supporting programs such as theatre, rehearsal room and car park are located underneath the landscape layer giving the overall shape for the landscape.

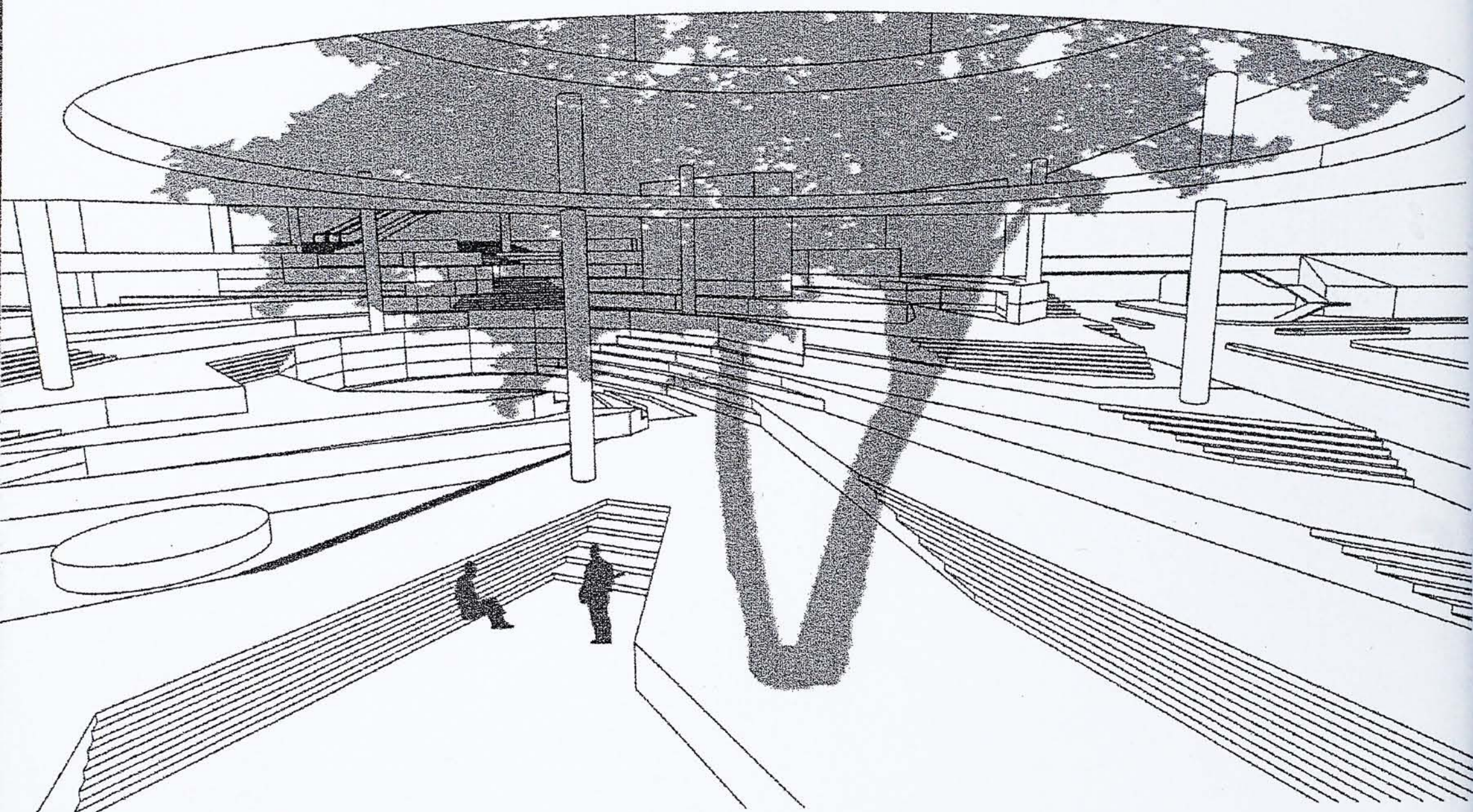


Stair as seating

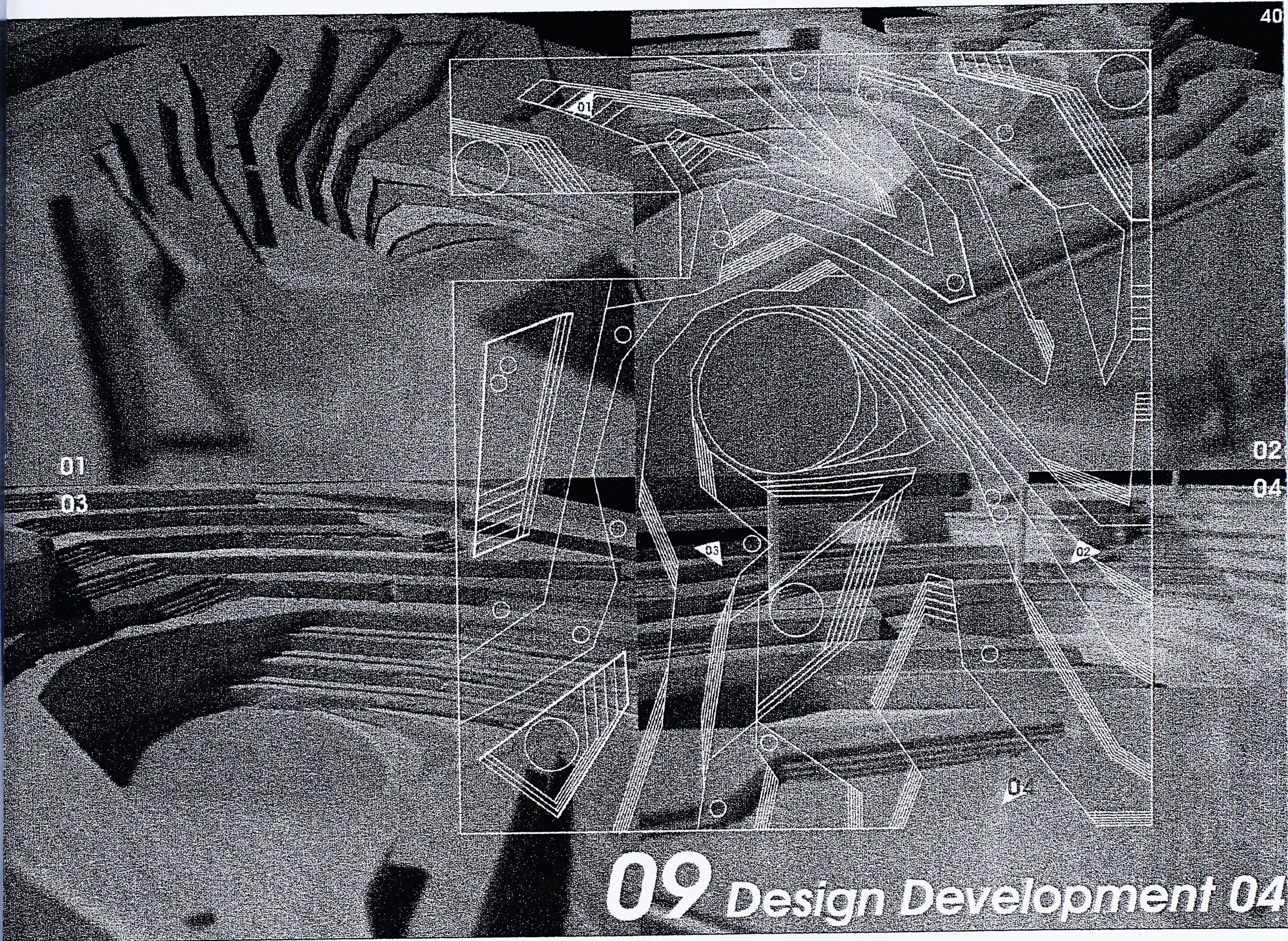
KCR Station



Mong Kok



Perspective view - Entrance



01
03

40

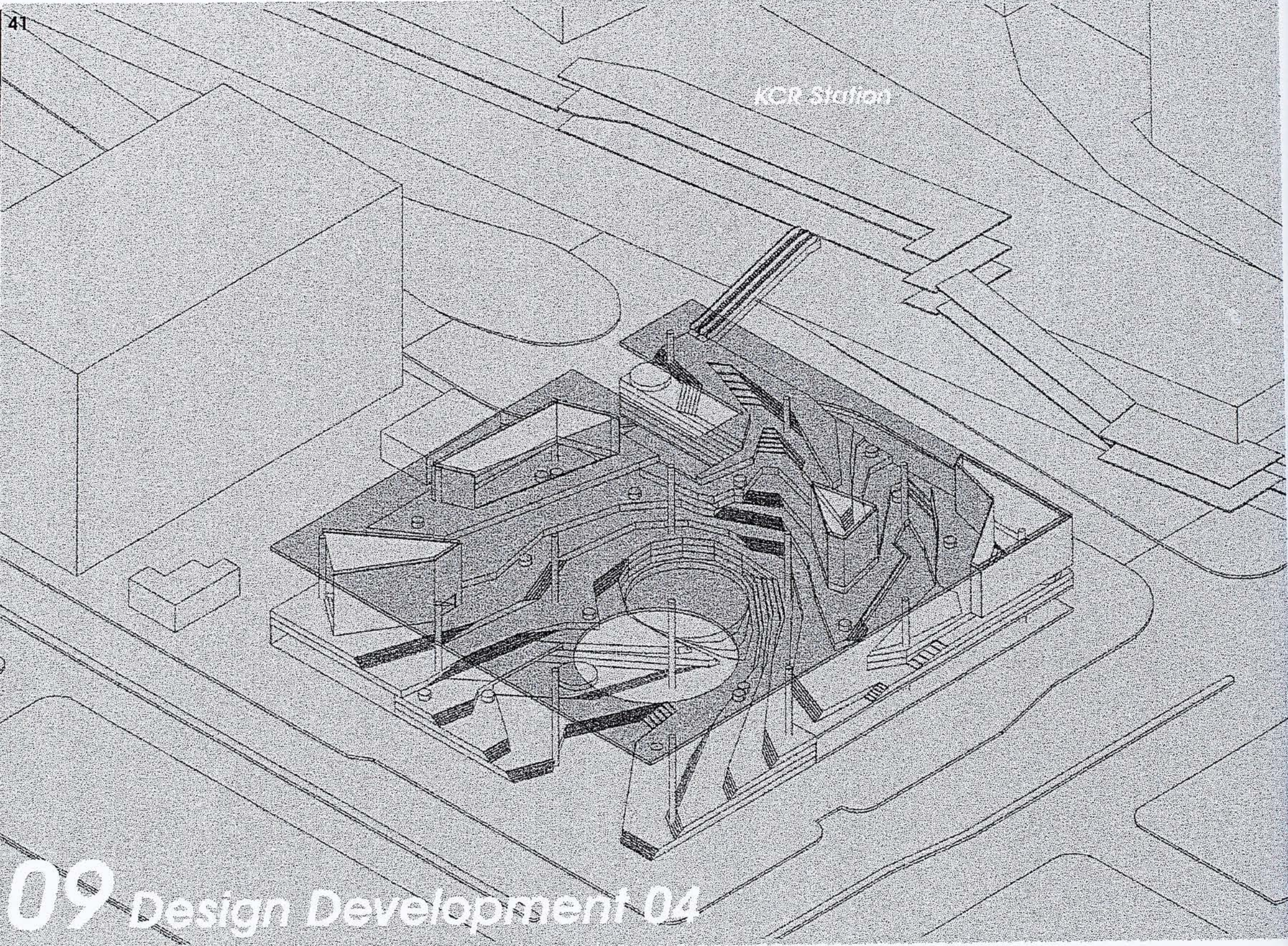
02
04

03

02

01

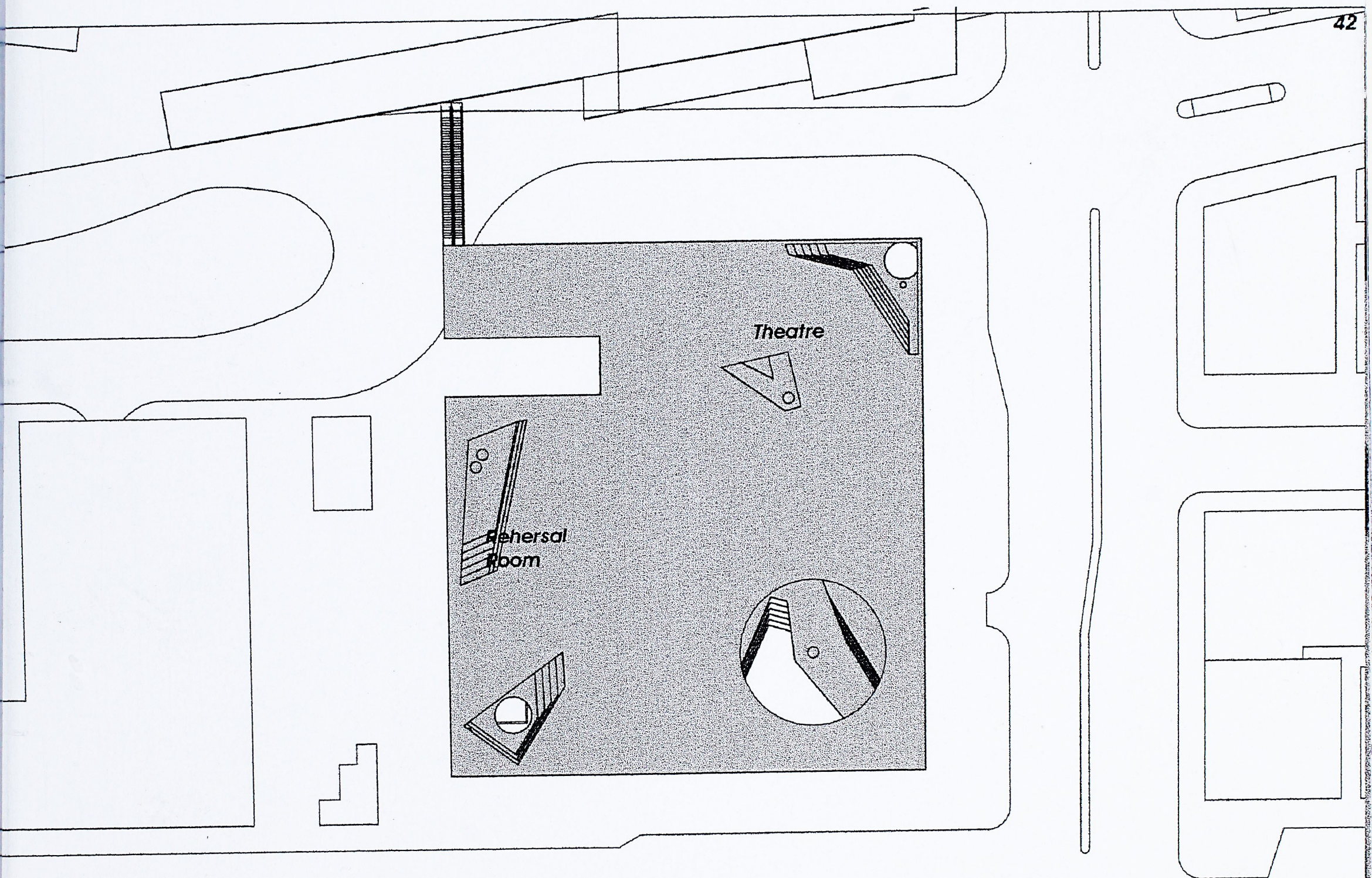
09 *Design Development 04*



41

KCR Station

09 Design Development 04



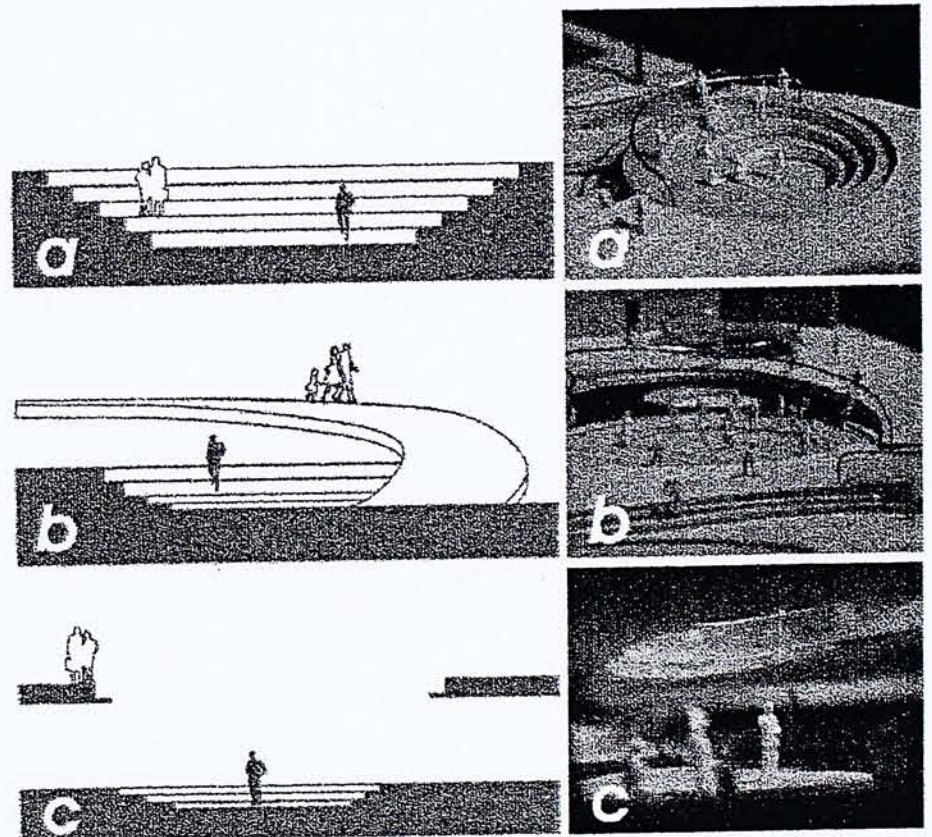
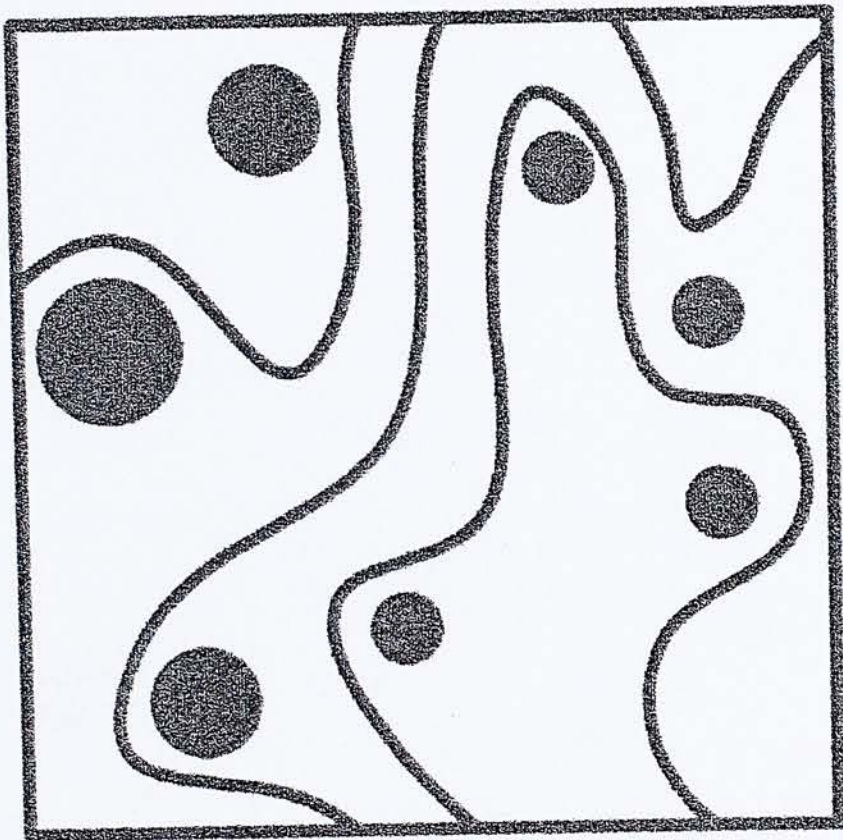


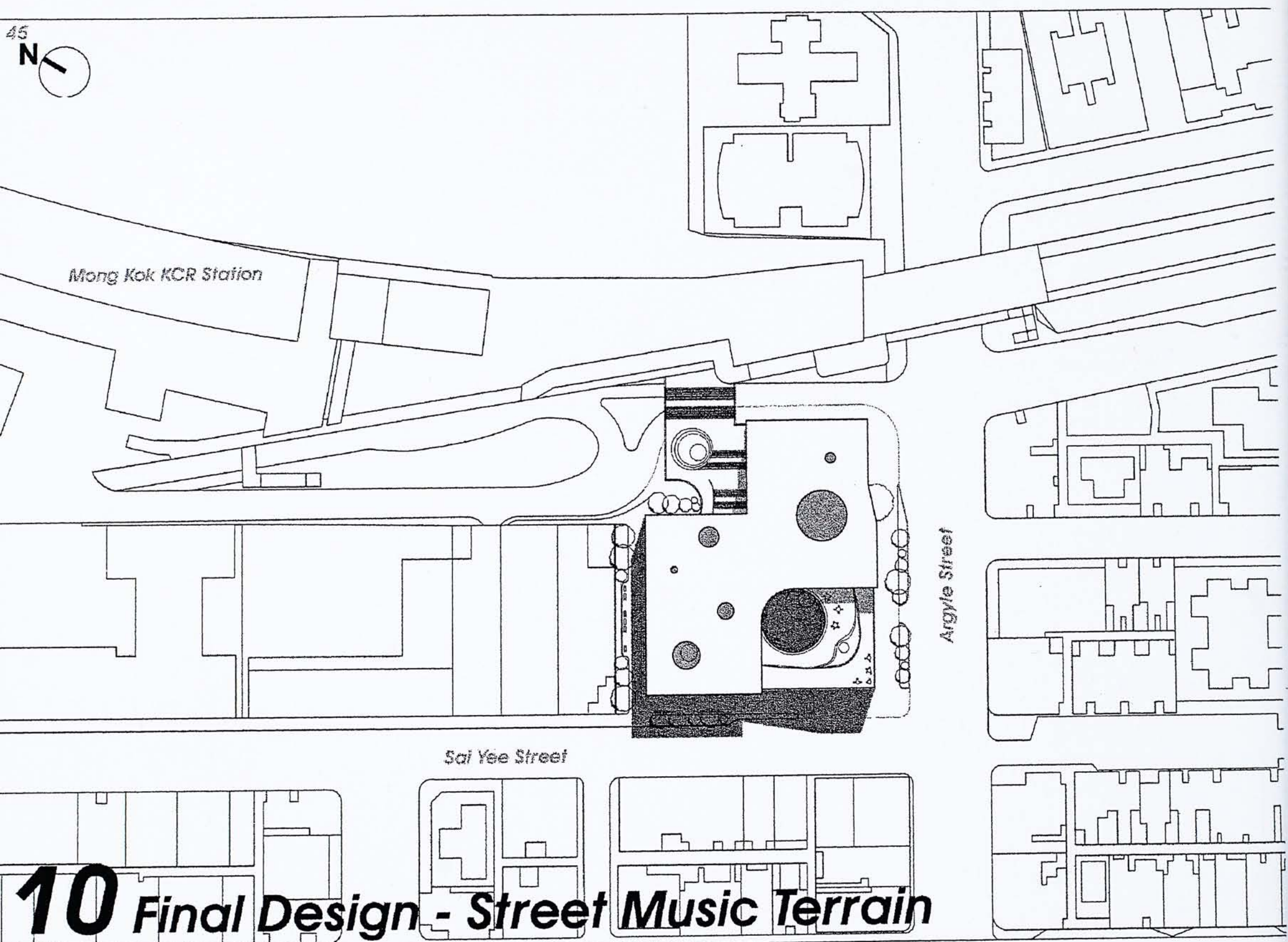
The intention is to provide the freedom of playing and listening music
 structure by human circulation. It provides numerous choices of cir-
 culation and performance space in which various relationships
 circulation and performance space are created. Visitors then
 and listen to music along the paths in the terrain - once they
 then to different kinds of music.

10 Final Design - Street Music Terrain

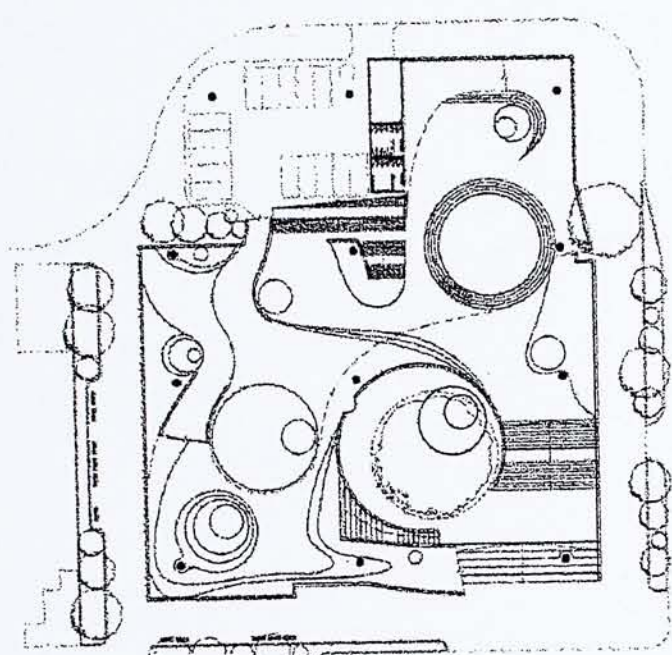
The landscape layers in the previous scheme are modified so that different performance spaces and seating relationship are created by elements, stairs and ramps, of circulations :

- a) seating around performance space (for formal performances)
- b) circulation around performance space (for fast flowing of people)
- c) seating on the upper floor (for different view angles)

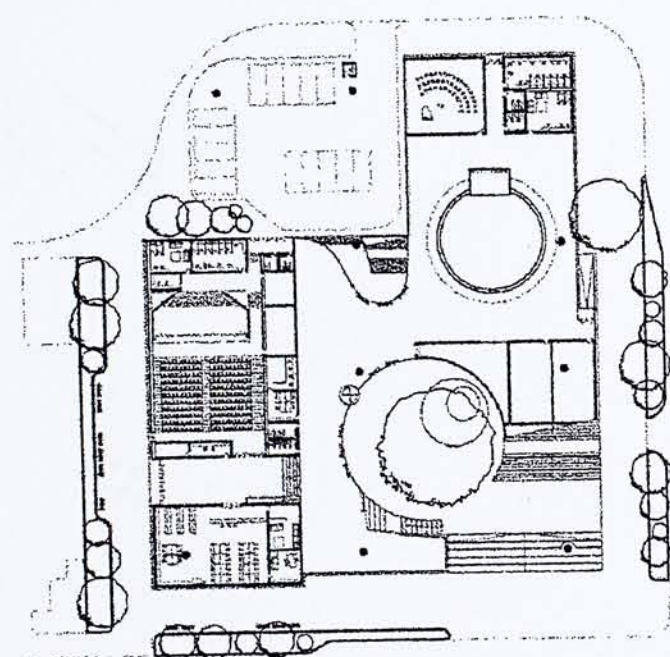




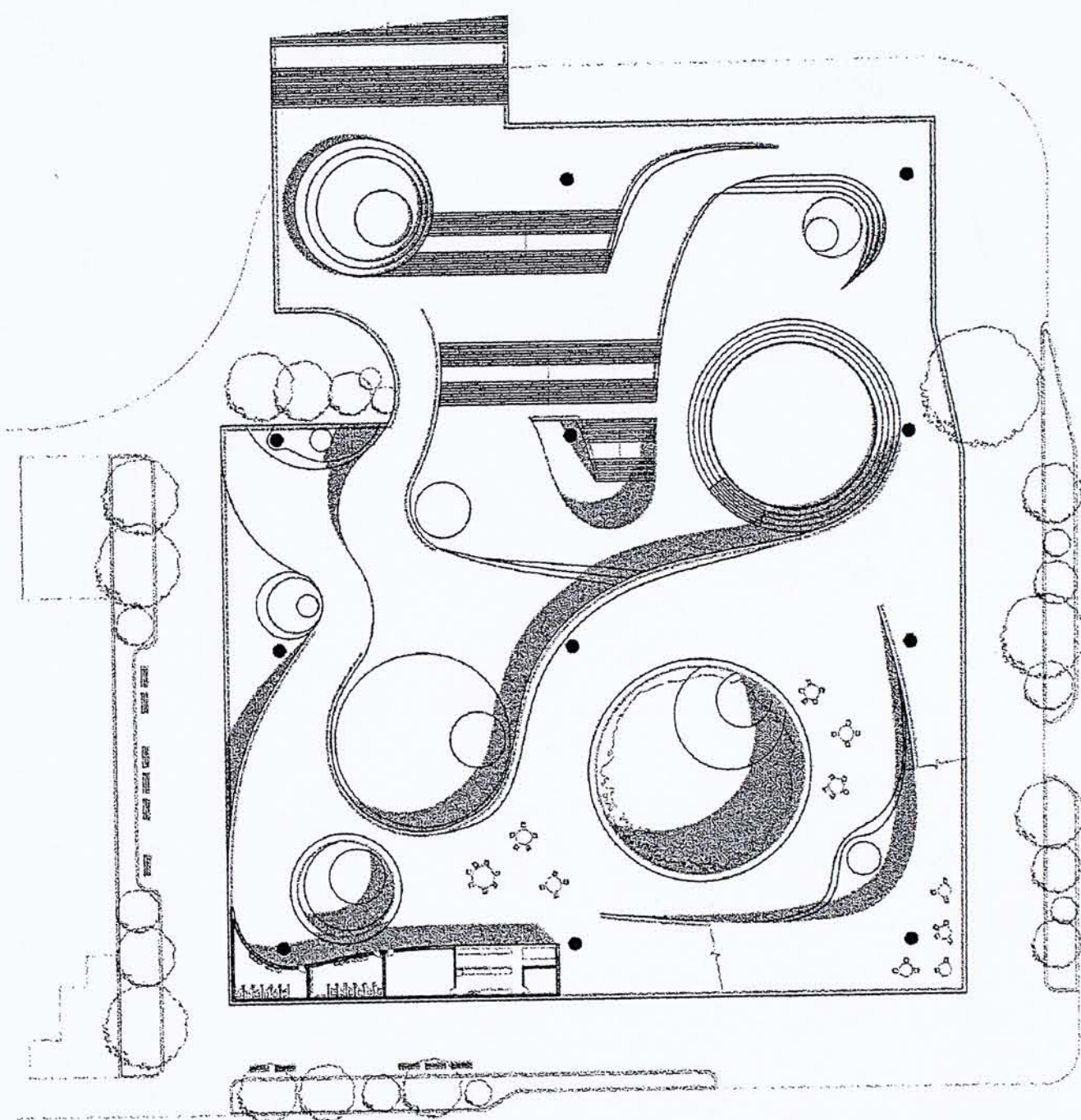
10 Final Design - Street Music Terrain



First Floor Plan



Ground Floor Plan

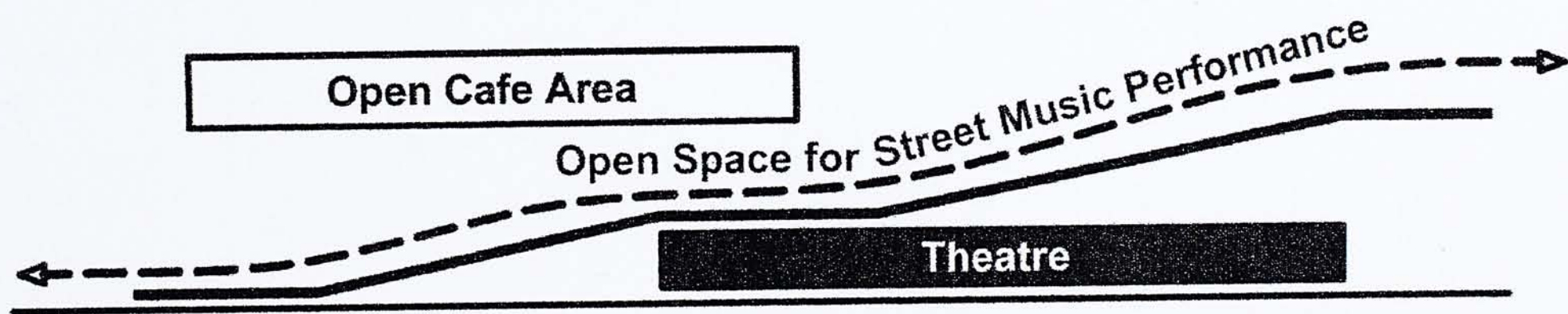
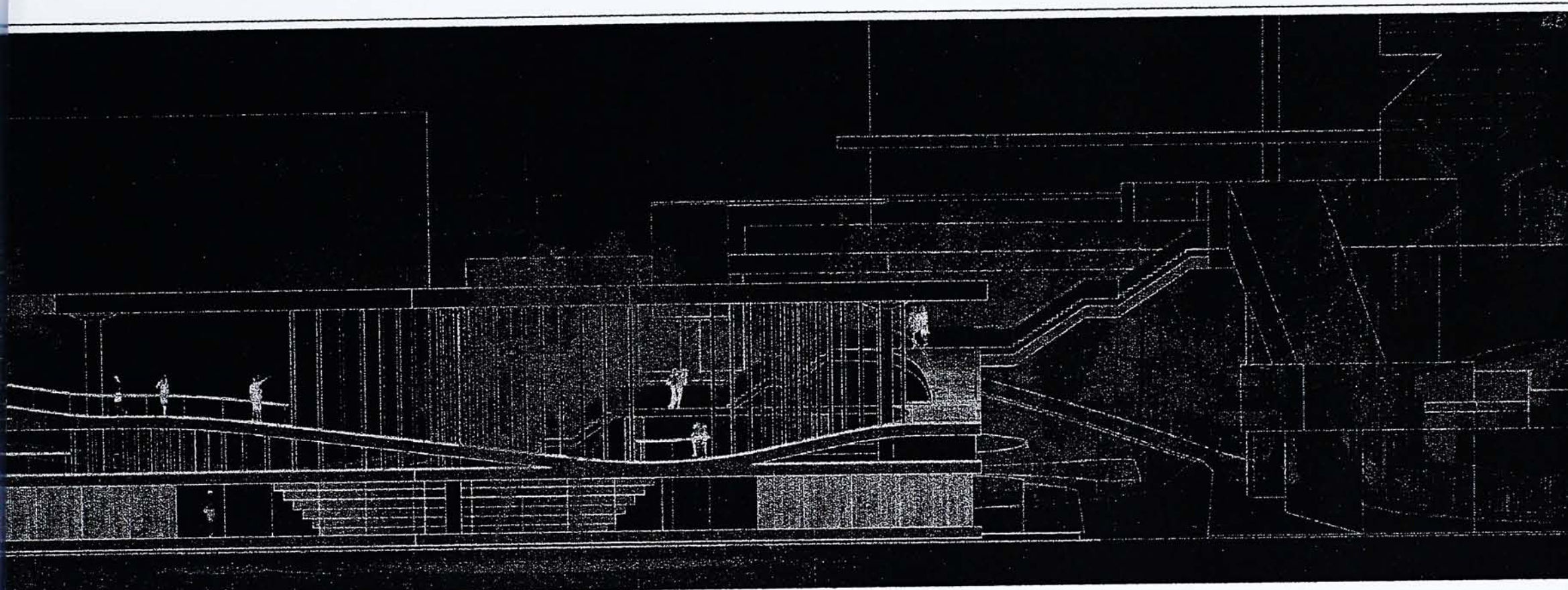


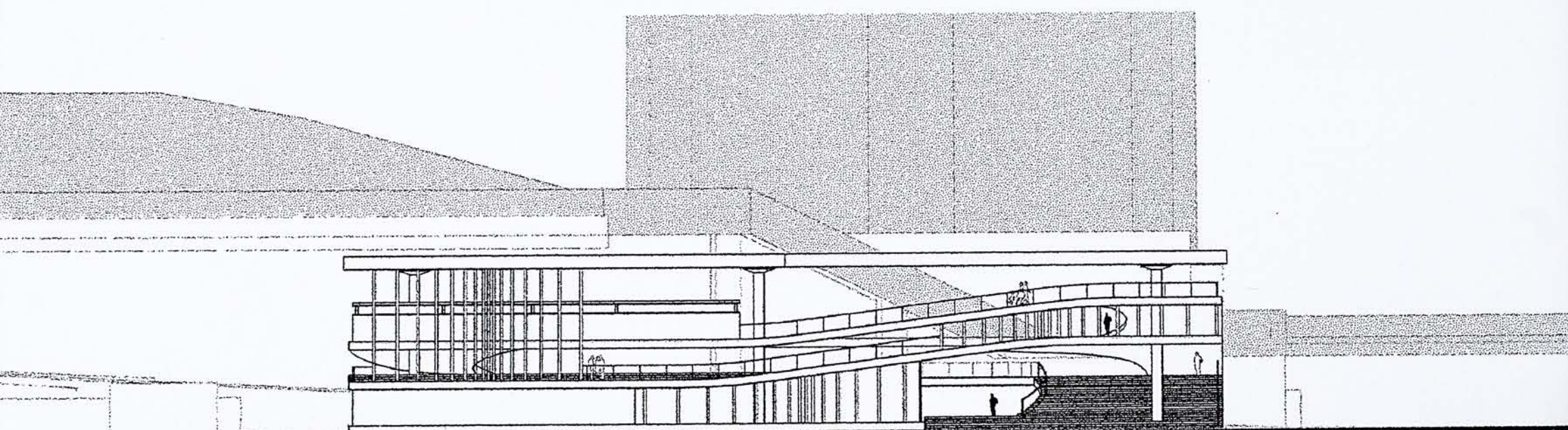
Second Floor Plan



Side Elevation

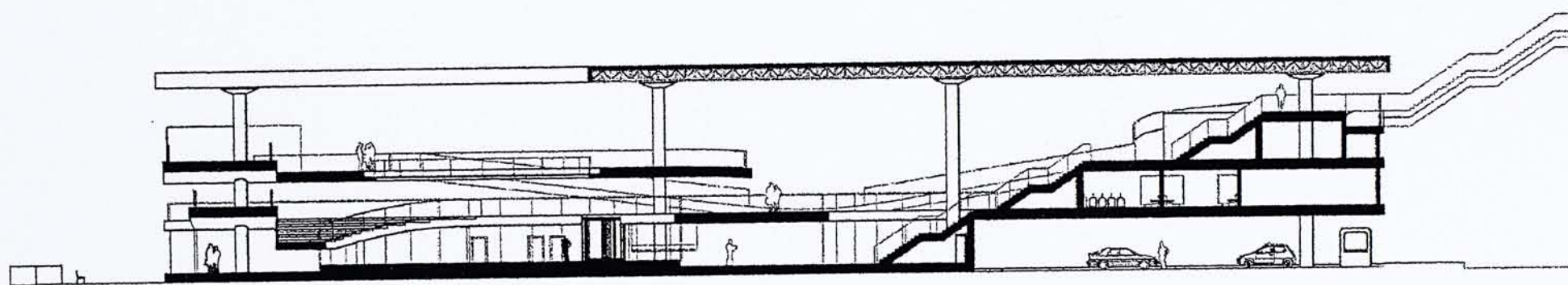
10 *Final Design - Street Music Terrain*



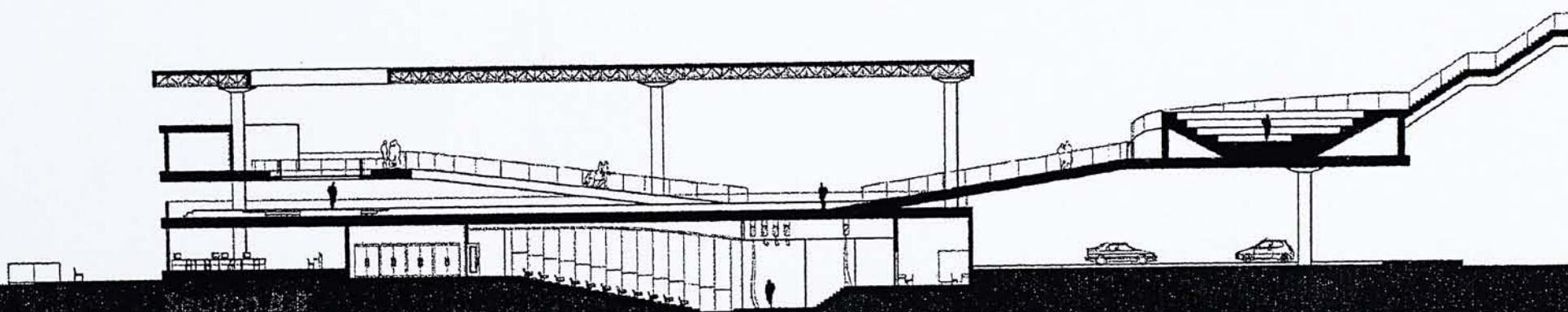


Front Elevation

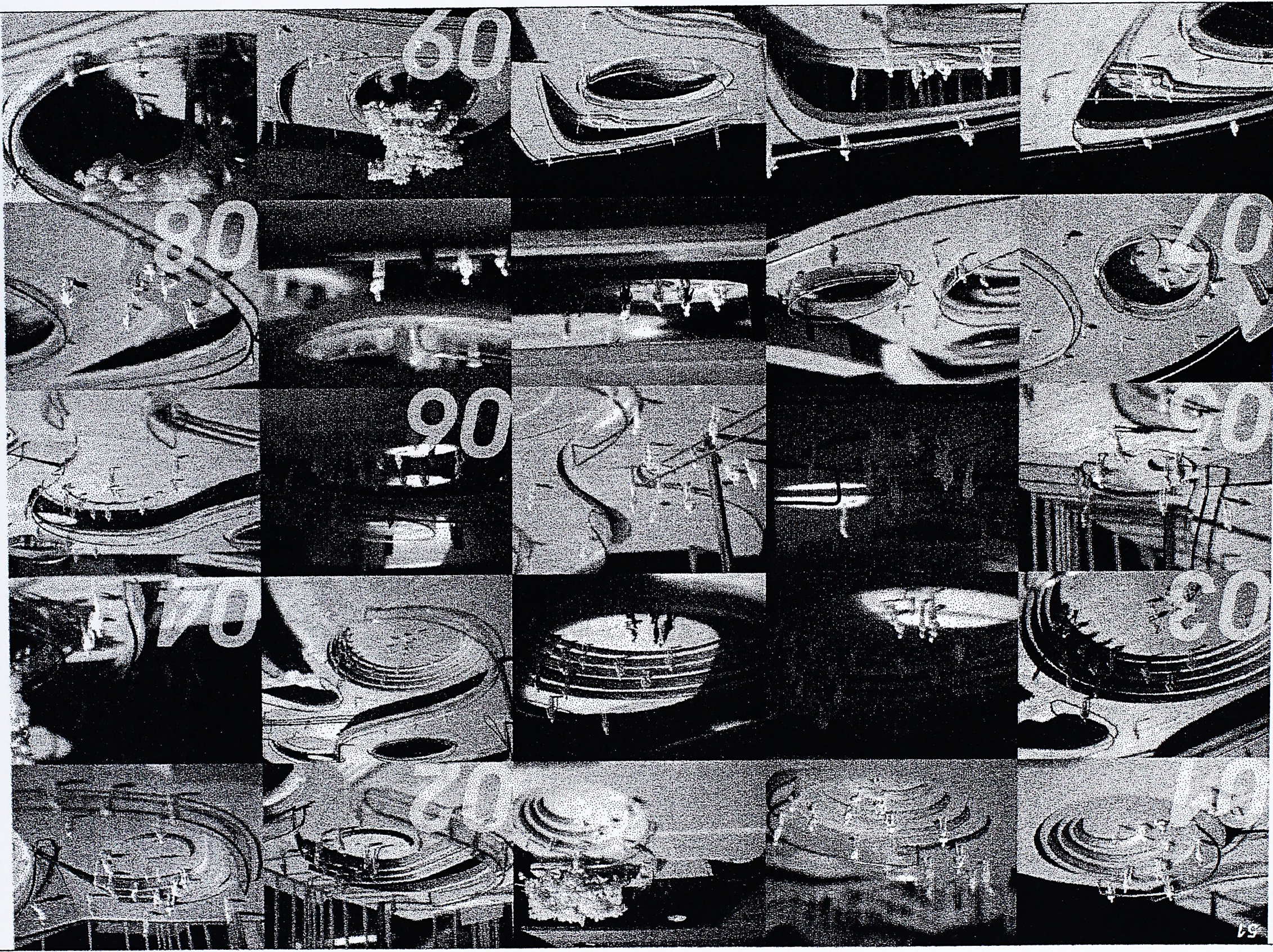
10 Final Design - Street Music Terrain

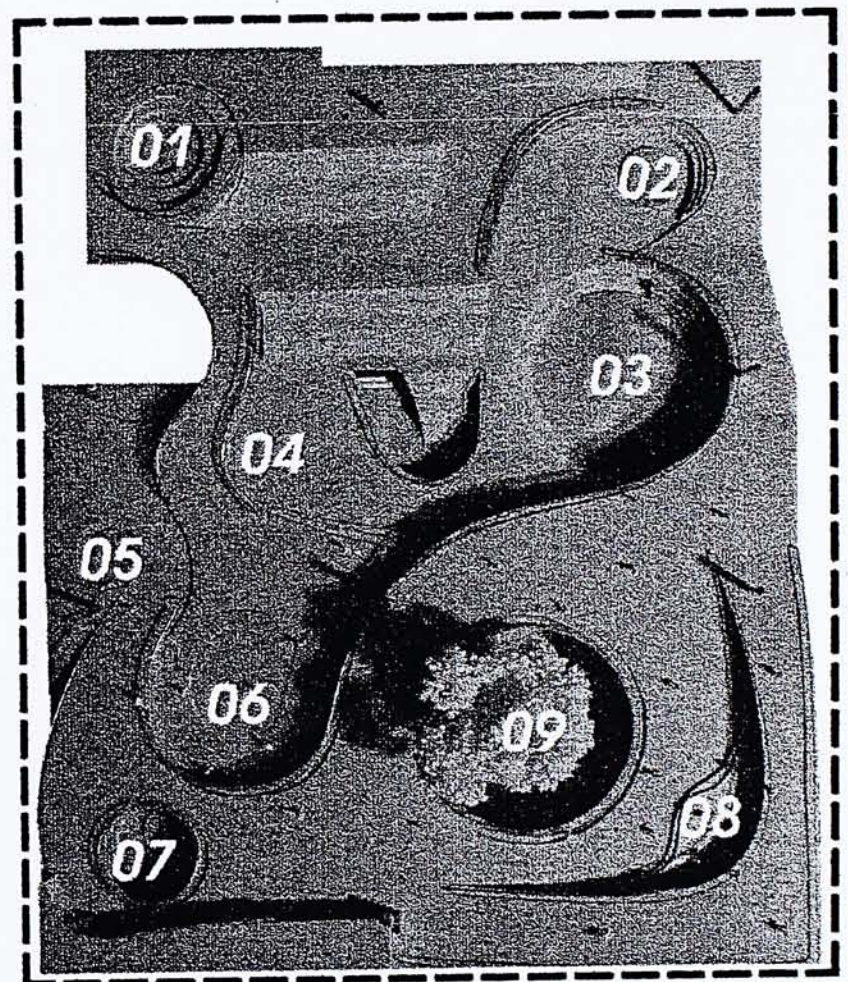
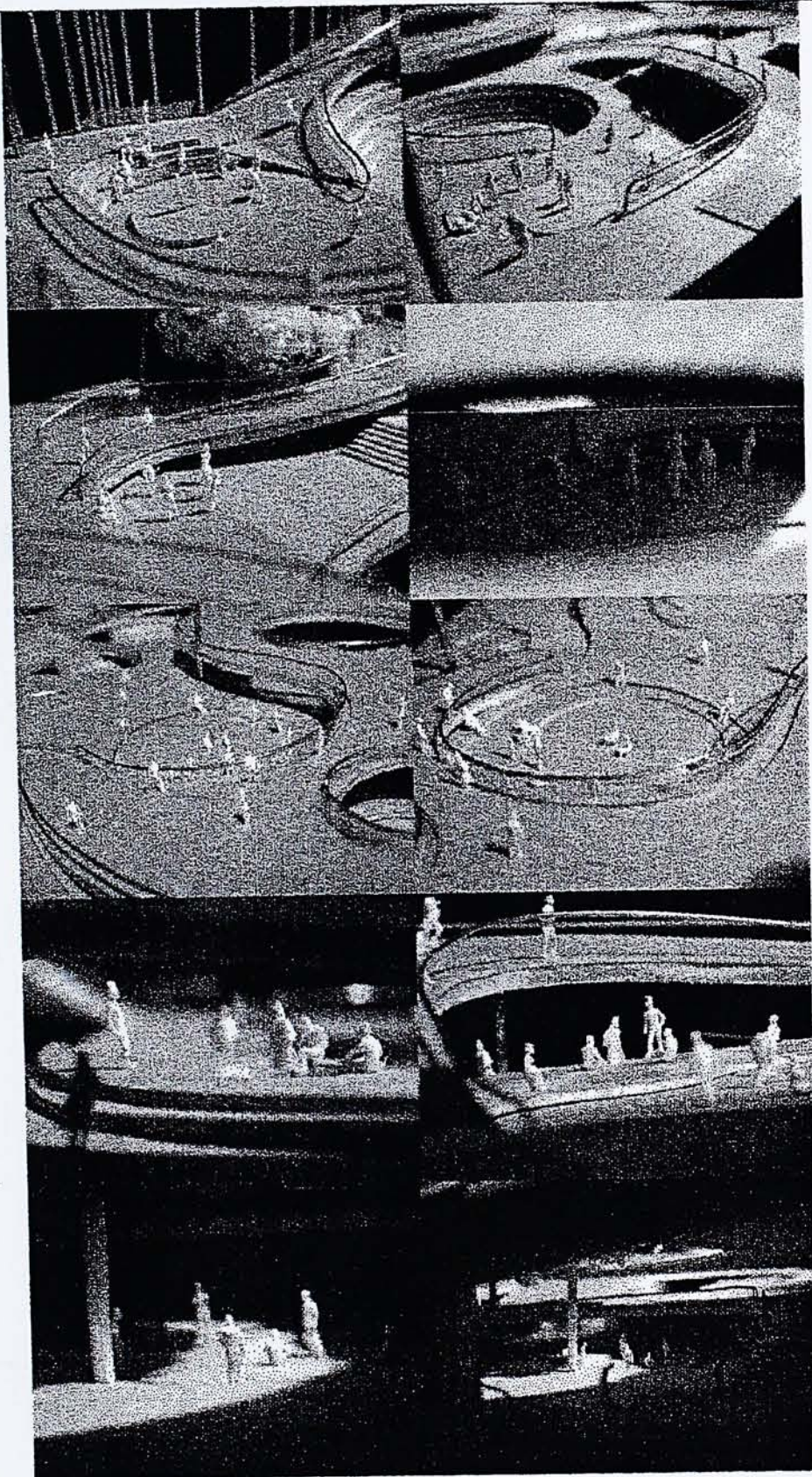


Section A-A'

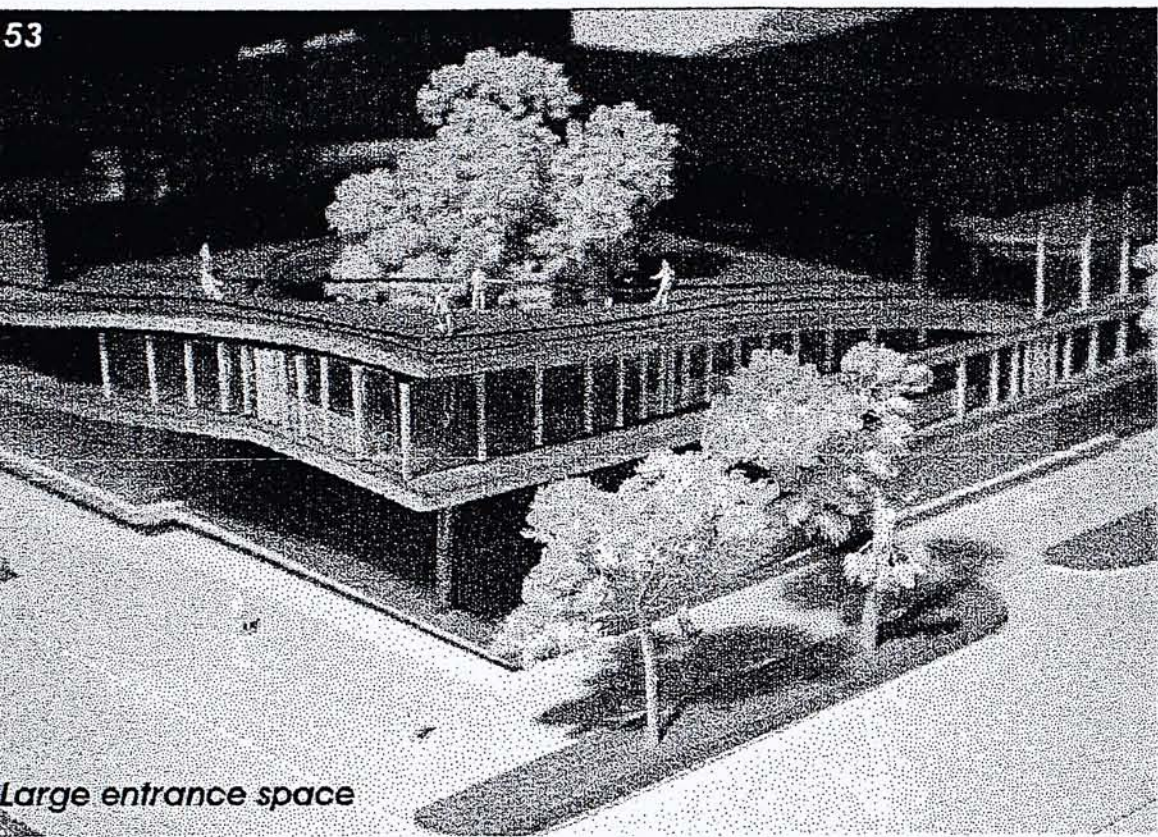


Section B-B'

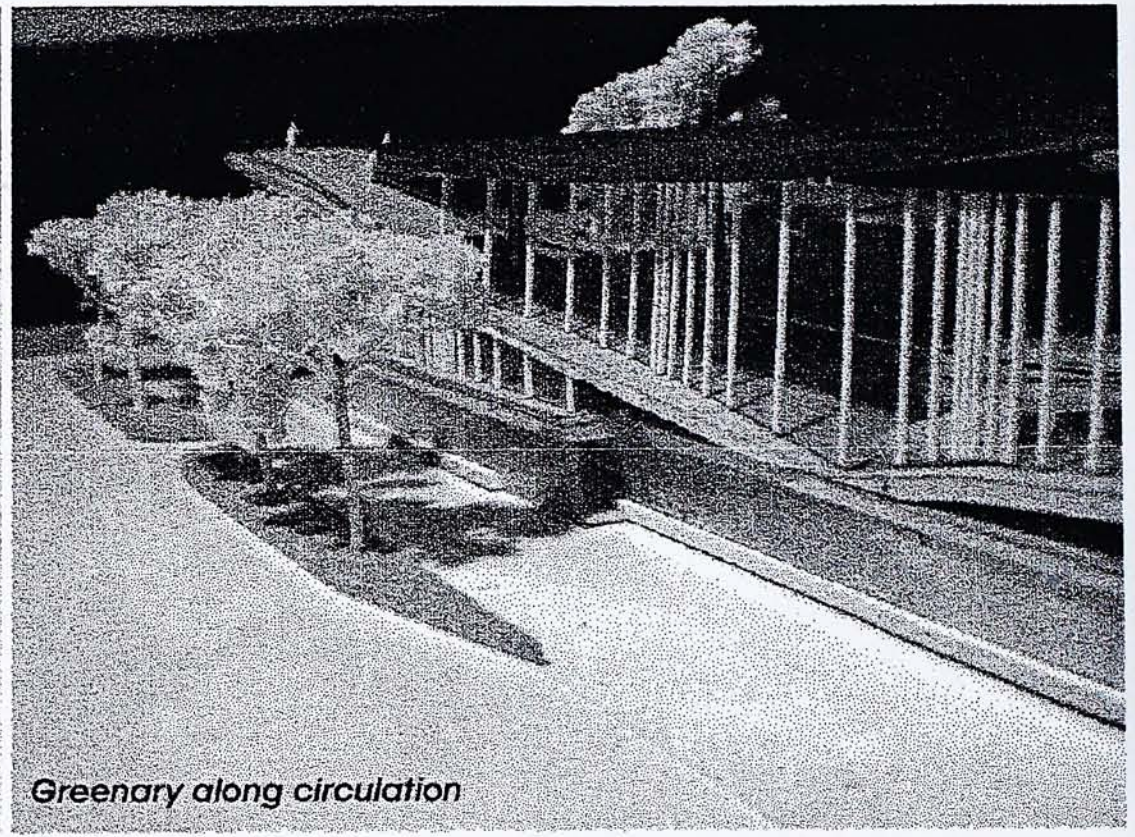




10 *Final Design - Street Music Terrain*



Large entrance space



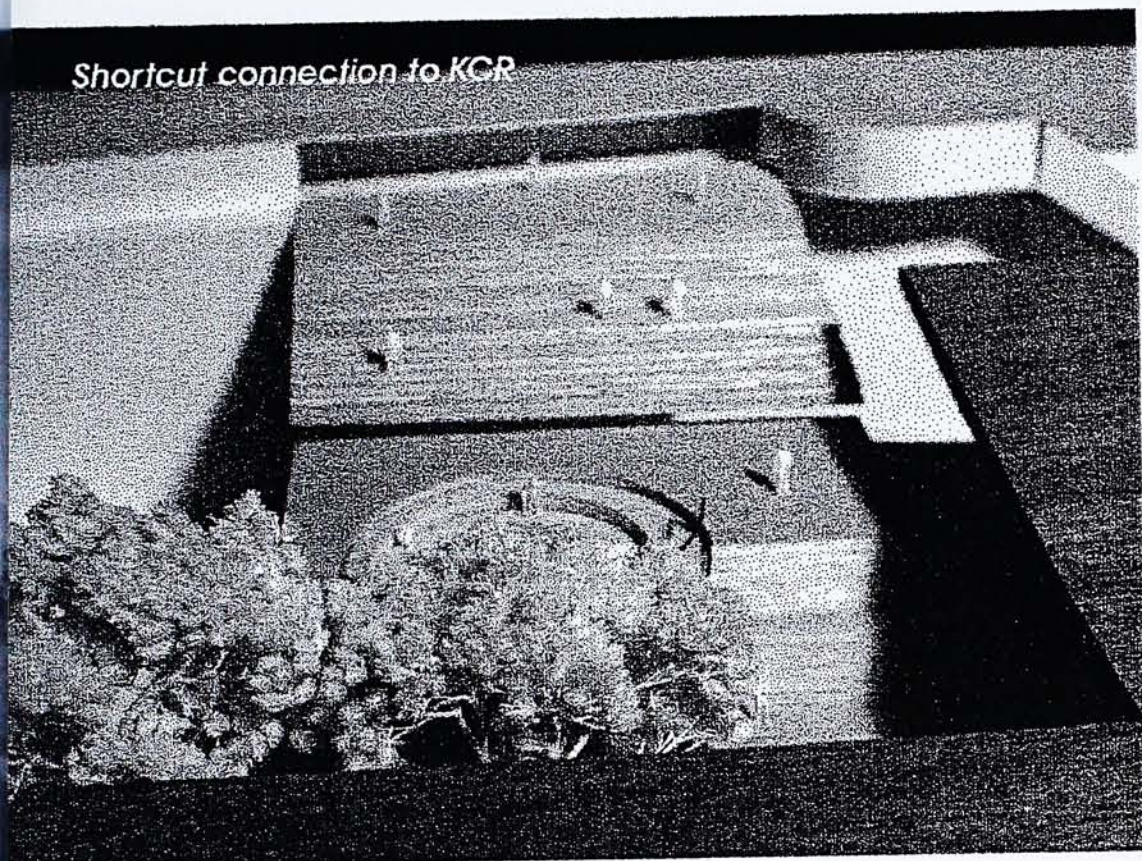
Greenary along circulation



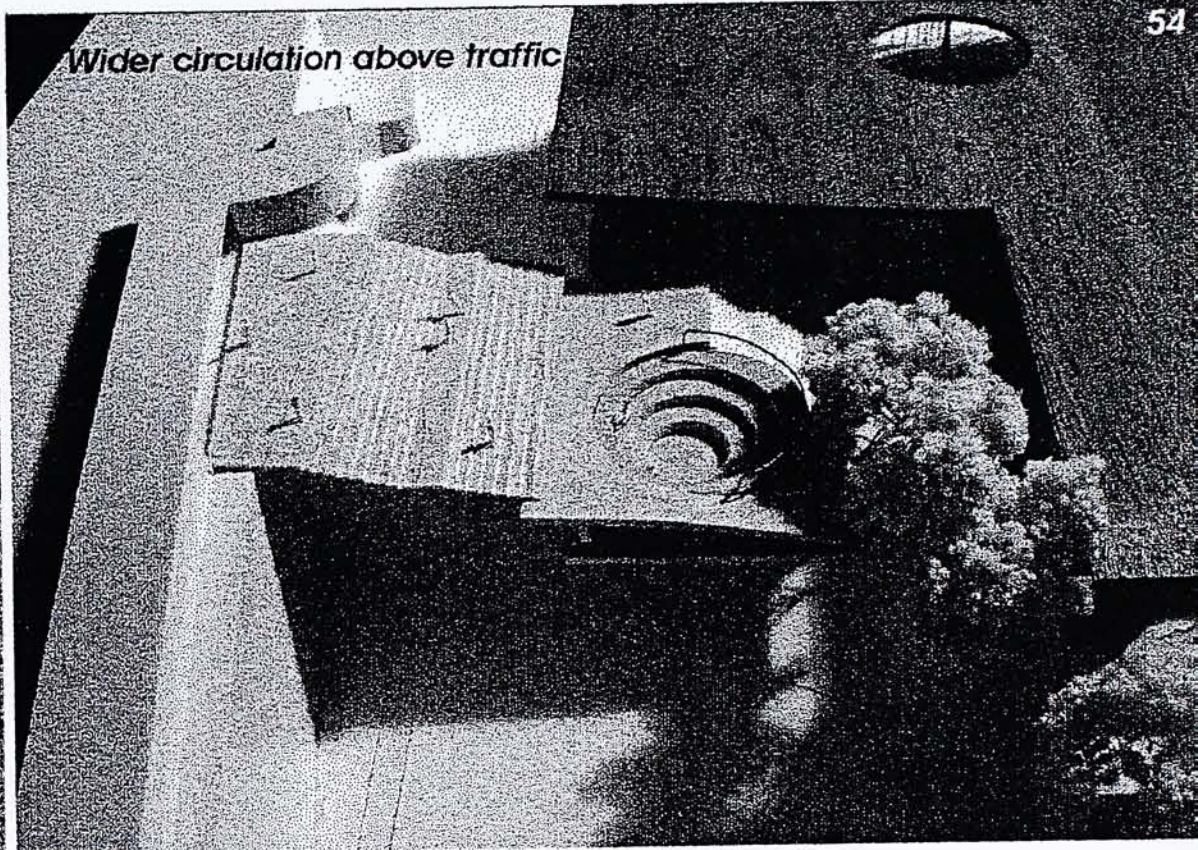
Wider circulation

10 *Final Design - Street Music Terrain*

Shortcut connection to KCR

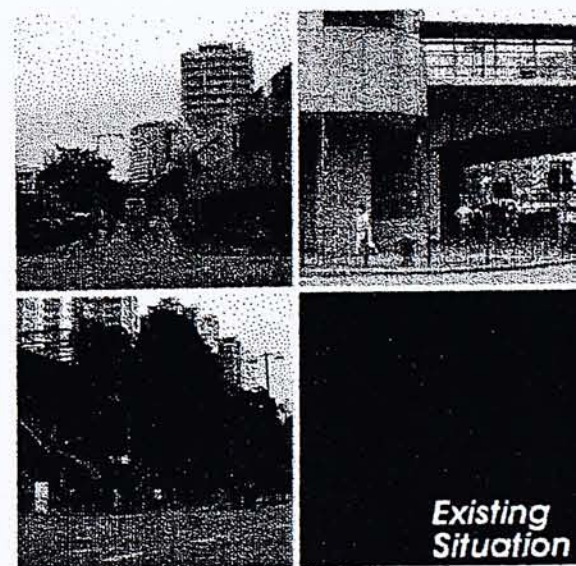
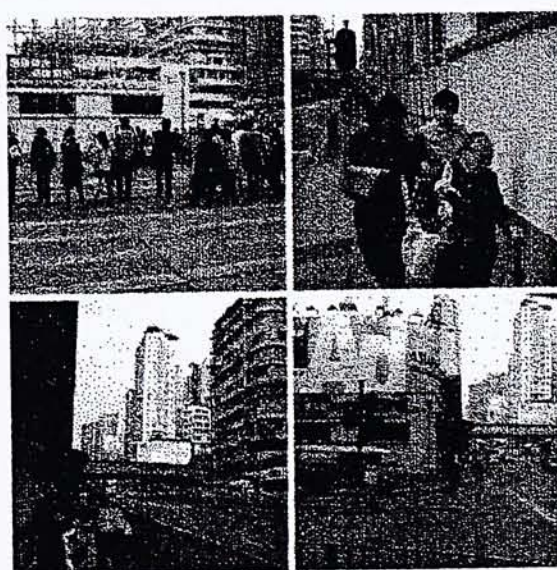


Wider circulation above traffic

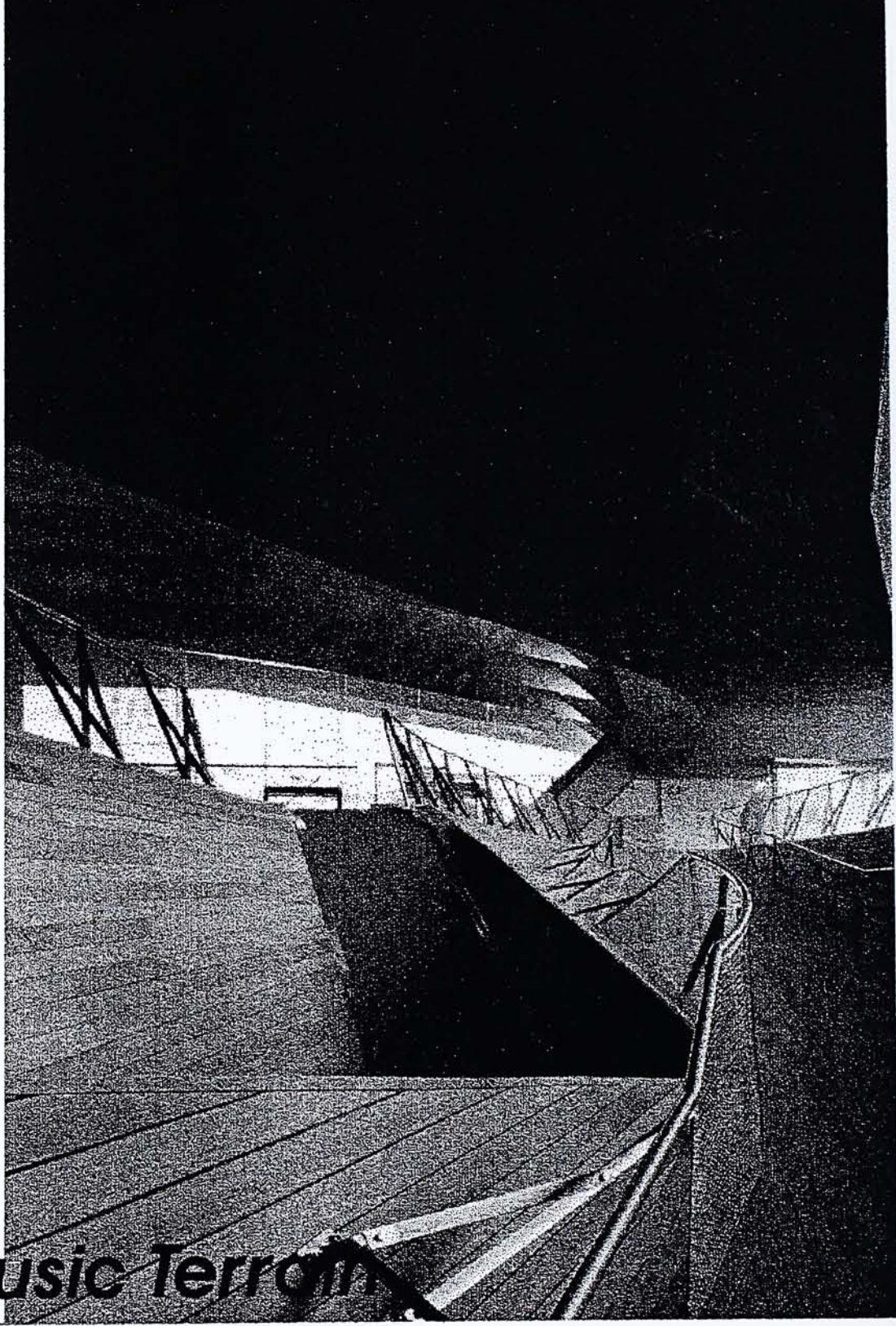
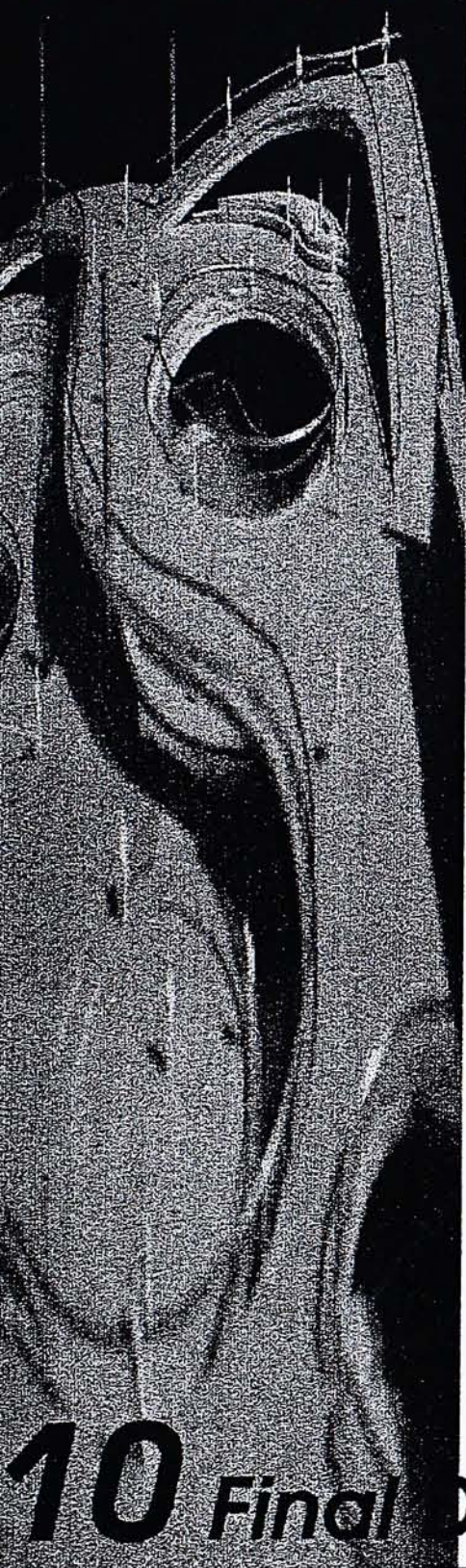


Influence to the District

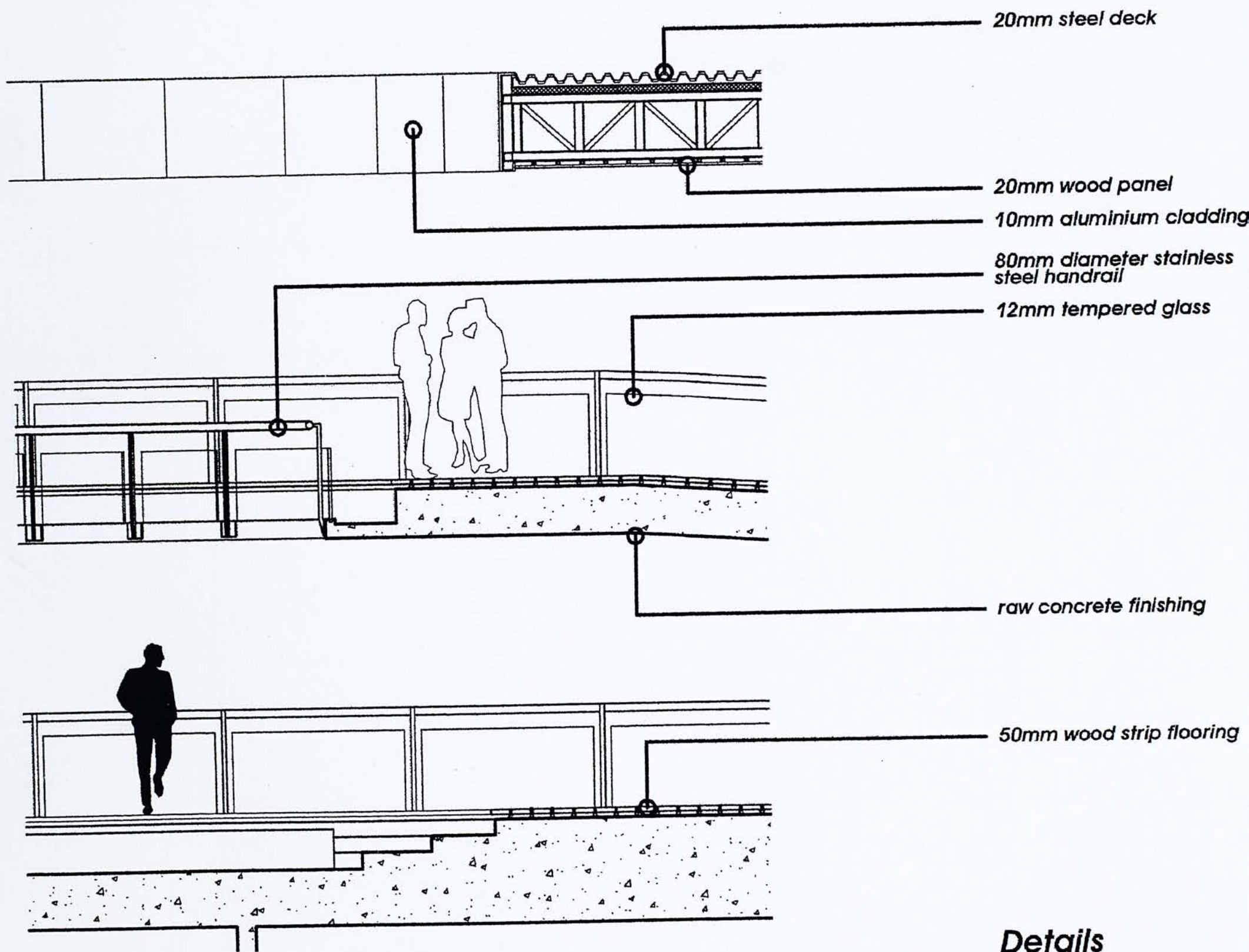
The music terrain provides a shortcut connecting KCR station and Mong Kok. This large open space not only provides a buffer zone to solve the circulation problem around the site, but also a big leisure area inside the crowd district.



Existing Situation



10 *Final Design - Street Music Terrain*



Book Reference

- *Architecture as a translation of music / edited by Elizabeth Martin.*
- *Aesthetics of total serialism : contemporary research from music to architecture / Markus Bandur.*
- *Theory, analysis, and meaning in music / edited by Anthony Pople.*
- *Creative improvisation : jazz, contemporary music, and beyond : how to develop techniques of improvisation for any musical context / Roger T. Dean, with assistance from Ashley C. Brown.*

11 Reference

Special Thanks to.....

Tim, Vito, Annie, Kevin, Wan, Ka

12 Acknowledgement

ARCHITECTURE LIBRARY

建築學圖書館

THESIS 畢業論文

Overdue Fines on Thesis

HK\$1.00 per hour

4 hrs.

Time Due 還書時間		
- 1 NOV 2012 4:12 pm		

CUHK Libraries



004119412